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Environmental Information Resources for State and Local Elected Officials Solid Waste

Rivkin Associates, Inc, Washington, D C

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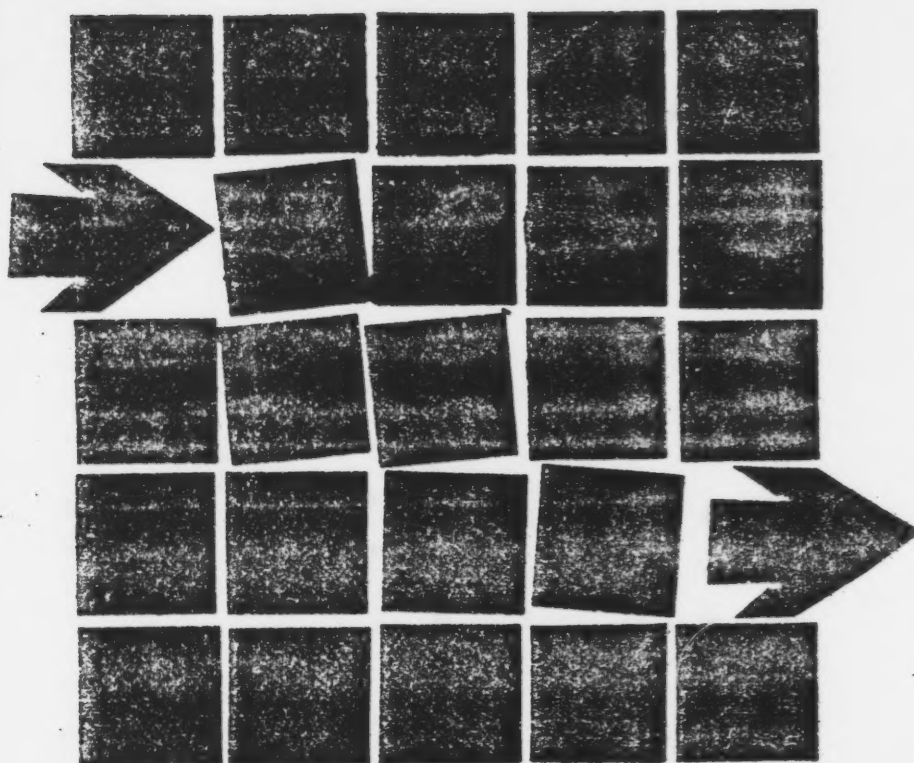
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SOLID WASTE

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ENVIRONMENTAL INFORMATION



resources for state & local elected officials

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16. Abstract This is one of a series of guidebooks for helping elected officials at the State and local levels and staff aides find their way through the maze of information about environmental matters with which they must deal. Other guidebook subjects are General Reference Guide and Solid Waste.			
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2. Technologies (SW-157.2)
3. Markets (SW-157.3)
4. Financing (SW-157.4)
5. Procurement (SW-157.5)
6. Accounting Format (SW-157.6)
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Introduction

What is Solid Waste?

To paraphrase the Resource Conservation and Recovery Act of 1976, "solid waste" means any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities. The term does not include solid or dissolved material in domestic sewage, or solid or dissolved materials in irrigation return flows or industrial discharges which are point sources subject to permits under the Federal Water Pollution Control Act. Nor does it include source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954. While this definition is probably broader than that used by most jurisdictions, it emphasizes the variety of types of disposal problems associated with "solid waste."

Whether solid waste be defined broadly or narrowly, one thing is clear--the volume and variety of solid waste is rapidly increasing. The reasons are technological changes, rising standards of living, and the era of "disposable" products and packagings in which we live. In the past 50 years, the amount of waste discarded per person in the United States has doubled. Solid waste has become an increasingly difficult problem to deal with due to increased urbanization and population concentration, as well. What once could be buried on one's own farm or "down the road" now must be collected and buried elsewhere or otherwise disposed of. Land is one of our most valuable and most limited resources--particularly near our metropolitan areas where the majority of population lives and, hence, where the majority of solid waste is generated. Yet, we dispose of most of our solid waste on land, in open dumps or sanitary landfills. It is becoming increasingly difficult for municipal and county governments to find sites for land disposal within reasonable distance of the population

generating the waste. Coupled with the scarcity of land is the frequent and vociferous opposition to potential landfill sites by those living anywhere in the vicinity. Air pollution control regulations have made incineration to reduce waste volumes almost impossible. And all the while, the amount of garbage to be disposed of keeps increasing.

In addition to siting problems with landfill disposal, use of this technique of disposal without adequate planning, careful management, and appropriate precautions can result in danger to human health and to the environment. A number of instances have been recorded where improper landfill siting or operations have caused such difficulties. The area of hazardous waste management and disposal, in particular, has become increasingly apparent as a problem area in severe need of attention. Generation of hazardous wastes is increasing, due to increased use of chemicals and advanced technologies, including use of radioactive materials, and simply more industrial production. Awareness of potential hazards has heightened with the discovery of new ways in which some materials and chemicals used in manufacturing can have harmful effects, either alone or when combined in the environment with other chemicals, resulting in interactive effects. Use of chemical fertilizers and pesticides in modern agriculture, and use of other chemical additives in livestock through feeds and through direct inoculations has also increased significantly. Finally, as a result of other pollution treatment and control activities concerning air and water, sludge and other residues from pollution clean-up efforts have been created which also must be disposed of safely.

Recovery of materials and/or energy from the waste stream has received increasing attention at the national, state, and local levels during the past few years. The U.S. annually consumes nearly 200 million tons of major metal, paper, glass, rubber, and textiles. Of this amount, only about 25 percent--50 million tons--are obtained from resource recovery. This represents the lowest percentage of resource

recycling ever in history, according to EPA. Nearly all the recovery that does occur is from industrial wastes, very little from municipal wastes. Millions of tons of recoverable materials are buried each year, lost forever to use by man. Many of these materials are in short supply. They are costly to find and extract from the earth, or to manufacture. Some of these materials can easily be reused and, even under current market conditions, can bring a significant return if sold for reuse. Others could do so if secondary materials markets were developed, and if all the costs (including disposal costs) of manufacturing processes were included in the equation. Often these recyclable materials are easily separated from the waste stream with current technology. More will be separable as the technology develops. Other types of materials found in the waste stream are combustible. By some estimates 70-80 percent of the municipal waste stream is combustible and can be converted to energy. This waste material can be burned at high temperatures to produce power directly, or converted through a number of available processes to another fuel (methane gas, alcohol, methanol, or low-Btu gaseous fuels and oils). It can thus substitute in part for the use of other, scarce power resources, while at the same time reducing dramatically the need to use valuable land--another scarce resource--for burial of waste materials. Several jurisdictions in the nation presently have such systems in operation, and many more are on the drawing board.¹

Because of the urgency of the need for better approaches to management and disposal of hazardous wastes, and because of the rapidly-advancing state-of-the-art in the technology of resource recovery, in late 1976 Congress passed and the President signed into law the Resource Recovery and Conservation Act of 1976. This new legislation mandates Federal, state, and local action in the area of solid and hazardous waste management and disposal.

¹ A listing of areas with solid waste energy and/or materials recovery systems in operation or planned is included in EPA's publication, A Nationwide Survey of Resource Recovery Activities, SW-142, by Richard Hopper, January 1975. A copy of this publication is included in the materials packet which accompanies this guide.

Under the new legislation, EPA, together with the states, is required to identify hazardous wastes and establish standards for record-keeping, labeling, containerization, transporting, treatment, storage, and disposal of such wastes. The legislation requires establishment of a permit and manifest system to assure proper handling and disposal of all hazardous wastes, from generation point to final disposal. Other regulations are required to be promulgated with respect to transporters and disposers of hazardous wastes.

States are encouraged to develop their own hazardous waste management programs. Such programs, when approved by EPA, may operate in lieu of Federal programs in this area. Funds are available to assist states in the development and implementation of authorized state hazardous waste programs.

The Resource Conservation and Recovery Act of 1976 also requires states to develop solid waste management plans, taking into account potential regional approaches, agency responsibilities, characteristics of solid waste generation, collection, and disposal in the state, methods for closing open dumps, transportation, industries, and many other characteristics of the state's economy and geology. All open dumps must be closed within a given time or upgraded to meet sanitary landfill standards. Financial assistance is available to states, counties, municipalities, intermunicipal agencies and local public solid waste management authorities for planning and for implementation of programs to provide solid waste management, resource recovery, and resource conservation services, as well as for hazardous waste management. A separate allotment of funds is appropriated for rural areas.

Federal research into various aspects of resource recovery technology and markets is provided for, and a number of other Federal activities are directed, including development of new procurement standards requiring the highest possible proportion of recovered materials to be used in procured items.

One additional requirement of the new legislation is of particular interest in the context of the present information-gathering effort. Congress required EPA to undertake the "coordination, collection and dissemination of information" on all aspects of solid waste and hazardous waste collection, management disposal, marketing of recovered products, financing, and research and development. All such information is to be made available through a central reference library to states, localities, and other interested persons. A program for rapid dissemination of information on solid waste and hazardous waste management, resource management, and methods of resource recovery from solid waste is to receive special emphasis.

It is clear that with this new legislation the Federal government is embarking upon a new era of involvement in the area of solid waste management, particularly from the standpoint of resource recovery and hazardous waste management efforts. At the same time, the new legislation requires greater activity on the part of the states, regions, and local jurisdictions.

In order to respond to these new regulations and new opportunities, state and local legislators, along with agency officials and program personnel, must work together--with assistance where necessary from Federal officials--to devise the best possible approaches to solid and hazardous waste management. A necessary first step in any such effort is gathering of information on which to make informed judgments. With a view to assisting in this process, and as an example of how this information-gathering process can be approached, the search strategy outlined in the General Reference Guide to Environmental Information Resources for State and Local Elected Officials was applied to the following two topic areas: Resource Recovery for Energy, and Hazardous Waste Management and Disposal. In addition to listing information resources and contacts in each of these topic areas, the material which follows incorporates some of the information itself, wherever possible. Documents not readily incorporable within this notebook format are included in the materials packet designed to

accompany this information guide. It is hoped that the material included herein and in the materials packet will serve as a useful introduction to the wealth of information available to assist legislators and officials in responding to this new federal mandate.

ENVIRONMENTAL INFORMATION

RESOURCES FOR

STATE AND LOCAL ELECTED OFFICIALS

solid waste

NON-DOCUMENTARY SOURCES

Organizations
Counterpart Affiliations

National League of Cities/U.S. Conference of Mayors
1620 Eye Street, N.W.
Washington, D.C. 20006
(202) 293-7300

These two organizations operate in tandem to analyze Federal and state programs' impact on municipal affairs, and to assist mayors, council members, and urban staff personnel in shaping and understanding approaches and solutions to current problem areas. The organizations publish and distribute a large number of publications, both regular (such as the periodicals Nation's Cities and Washington Report), and occasional reports on what individual cities are doing, results of research pertinent to urban concerns, and special reports on projects conducted by NLC/USCM.

Among the publications currently available from NLC/USCM relevant to resource recovery and/or hazardous waste management are the following publications included in the materials packet:

Solid Waste Management...An Overview of State Legislation
Municipal Solid Waste Management--Resource and Energy
Recovery

Resource Recovery Planning...An Overview of the Implemen-
tation Process

Four reprints from Nation's Cities:

Dumps: A Potential Threat to Our Groundwater
Supplies

Solid Waste, America's Neglected Pollutant (A Four-
Part Series of Articles from the June through
September, 1970 Issues)

Cities and the Nation's Solid Waste Disposal Crisis

Solid Waste Management Today...Bringing About Munici-
pal Change--A Nation's Cities Special Report

Organizations
Counterpart Affiliations

The Council of State Governments

Headquarters Office:
Iron Works Pike
Lexington, Kentucky 40511
(606) 252-2291

Southern Office:
3384 Peachtree Road, N.W.
Atlanta, Georgia 30326
(404) 266-1271

This is an organization of all the state governments which conducts research on state programs and problems, maintains an information service for use by state agencies, officials, and legislators, assists and promotes state-Federal and state-local liaison and cooperation. The Council has published two general reports on solid waste, which include sections on resource recovery: The States' Roles in Solid Waste Management "A Task Force Report" (reprinted by EPA in July 1973) and Our Effluent Society, "The States and Solid Waste Management," published by the Council in February 1974. Copies of these two publications are included in the materials packet. The Council also has a publication on hazardous materials transportation.

In addition to their other research and publication activities, the Council annually publishes a volume on Suggested State Legislation. The 1973 volume included two pieces of legislation relevant to the present topics -- a Model State Solid Waste Management and Resource Recovery Incentives Act, and a Model State Toxic Waste Disposal Act. These two model acts were the result of the work of the National Symposium on State Environmental Legislation which met in Arlington, Virginia on March 15-18, 1972. This symposium was co-sponsored by the Council of State Governments and EPA, as well as several other agencies at the Federal and state levels. It brought together state government officials and legislators, heads of environmental programs at the state and Federal levels, and many other types of individuals concerned with Federal and state programs on the environment.

The model legislation which resulted from this symposium was printed in the Council of State Governments' 1973 Suggested State Legislation, Volume XXXII, published September, 1972. These two model acts are reproduced on the following pages with the permission of the Council of State Governments.

State Solid Waste Management and Resource Recovery Incentives Act

Suggested Legislation

Source: The Council of State Governments, 1972

1 An Act providing for the planning and management of solid waste; to
2 provide incentives for obtaining material and energy resources from
3 solid waste; and for other purposes.

1 Section 1. [Short Title.] This Act may be cited as the Solid
2 Waste Management and Resource Recovery Incentives Act of [1972].

1 Section 2. [Finding of Necessity and Declaration of Purpose.]

2 (a) The Legislature of the State finds:

3 (1) that the people of this State have a constitutional right to
4 a clean environment and the costs of maintaining a clean environment
5 through the efficient environmentally acceptable management of solid
6 waste should be borne by those who use such services;

7 (2) that municipalities have serious economic, management, and
8 technical problems in the management of solid waste resulting from resi-
9 dential, commercial, industrial, agricultural, and other activities
10 carried on in such jurisdictions;

11 (3) that inefficient and improper methods of managing solid waste
12 result in scenic blights, create serious hazards to the public health,
13 cause pollution of air and water resources, accident hazards, and in-
14 crease in rodent and insect vectors of disease, have an adverse effect
15 on land values, create public nuisances, and otherwise interfere with
16 community life and development;

17 (4) that while the management of solid waste is the responsibility
18 of each municipality, problems of solid waste management have become a
19 matter statewide in scope and in concern and necessitate state action
20 through technical assistance and leadership in the application of new
21 improved methods and processes to reduce the amount of solid waste and
22 unsalvageable materials and to promote environmentally acceptable and
23 economical solid waste management;

24 (5) that the continuing technological progress and improvements
25 in methods of manufacture, packaging and marketing of consumer products
26 has resulted in an ever mounting increase, and in a change in the char-
27 acteristics, of the mass of material discarded by the purchaser of such
28 products;

29 (6) that the economic and population growth of our State, and the
30 improvements in the standard of living enjoyed by our population, have
31 required increased industrial production together with related commer-
32 cial and agricultural operations to meet our need, which have resulted
33 in a rising tide of useless, unwanted, and discarded materials; and

34 (7) that the failure or inability to economically recover material
35 and energy resources from solid waste results in the unnecessary waste
36 and depletion of our natural resources.

(b) I hereby declared to be the purposes of this Act to:

(1) plan for and regulate the storage, collection, transport, separation, processing, and disposal of solid waste in order to protect the public safety, health, and welfare and to enhance the environment of the people of the State;

(2) establish and maintain a cooperative state program of planning and technical assistance for solid waste management;

(3) provide the authority to and require municipalities to adequately plan and provide efficient, environmentally acceptable solid waste management;

(4) require review of the design and issue permits for the operation of solid waste management activities;

(5) promote, through the removal of economic disincentives and by providing economic incentives, the application of resource recovery systems, which preserve and enhance the quality of air, water, and land resources; and

(6) promote and assist in the development of markets for recovered and recycled materials by changing the state commerce, procurement, and taxation statutes and policies.

Section 3. [Definitions.] For the purposes of this Act, the following words and phrases shall have the meaning given herein unless their use in the text of the Act clearly demonstrates a different meaning.

(1) "Agency" shall mean a subordinate or semi-autonomous organization created by the State or a municipality which is empowered to act for the State or municipality;

(2) "Agricultural solid waste" shall mean the solid waste that results from the rearing and slaughtering of animals and the processing of animal products and orchard and field crops;

(3) "Collection" shall mean the act of removing solid waste from the central storage point of the primary source;

(4) "Commercial solid waste" shall mean solid waste generated by stores, offices and other activities that do not actually turn out a product;

(5) "Department" shall mean the department of this State charged with the administration and enforcement of the Act;

(6) "Director" shall mean the duly qualified and appointed person in charge of the department which is responsible for the administration and enforcement of this Act;

(7) "Disposal" shall mean the orderly process of discarding useless or unwanted material;

(8) "Dump" shall mean a land site where solid waste is disposed of in a manner that does not protect the environment.

(9) "Generation" shall mean the act or process of producing solid waste;

(10) "Incineration" shall mean the controlled process by which solid, liquid, or gaseous combustible wastes are burned and changed

into gases, and the residue produced contains little no combustible material;

(11) "Incinerator" shall mean an engineered apparatus used to burn waste substances and in which all the factors of combustion — temperature, retention time, turbulence, and combustion air — can be controlled;

(12) "Industrial solid waste" shall mean solid waste that results from industrial processes and manufacturing;

(13) "Institutional solid waste" shall mean solid waste originating from educational, health care, and research facilities;

(14) "Municipality" shall mean a town, village, city, county, district, or other public body created by or pursuant to state law;

(15) "Natural resources" shall mean materials which have useful physical or chemical properties which exist, unused, in nature. Synonyms: primary material, raw material, and virgin material;

(16) "Person" shall mean any individual, partnership, co-partnership, firm, company, corporation, association, joint stock company, trust, estate, county, municipality, or any other legal representative, agent or assigns;

(17) "Pollution" shall mean the condition caused by the presence in the environment of substances of such character and in such quantities that the quality of the environment is impaired or rendered offensive to life;

(18) "Processing" shall mean any method, system, or other treatment designed to change the physical form or chemical content of solid waste;

(19) "Reclamation" shall mean the restoration to a better or more useful state or the obtaining of useful materials from solid waste;

(20) "Recovered resources" shall mean materials which still have useful physical or chemical properties after serving a specific purpose and can, therefore, be reused or recycled for the same or other purposes;

(21) "Recovery" shall mean the process of obtaining material or energy resources from solid waste. Synonyms: extraction, reclamation, salvage;

(i) "Energy recovery" shall mean the obtaining of energy available from the heat generated when solid waste is incinerated;

(22) "Recycling" shall mean the process by which recovered resources are transformed into new products in such a manner that the original products lose their identity;

(23) "Rendering" shall mean a process of recovering fatty substances from animal parts by heat treatment, extraction, and distillation;

(24) "Residential solid waste" shall mean all solid waste that normally originates in a residential environment;

(25) "Reprocessing" shall mean the action of changing the condition of a secondary material;

(26) "use" shall mean the reintroduction of a commodity into the economic stream without any change;

(27) "Salvage" shall mean the utilization of waste materials;

(28) "Sanitary landfill" shall mean a site where solid waste is disposed using sanitary landfilling techniques;

(29) "Sanitary landfilling" shall mean an engineered method of disposing of solid waste on land in a manner that protects the environment by spreading the waste in thin layers, compacting it to the smallest practical volume, and covering it with soil by the end of each working day;

(30) "Scrap" shall mean discarded or rejected material or parts of material that result from manufacturing operations and are suitable for reprocessing or recycling;

(i) "Home scrap" shall mean scrap that never leaves the manufacturing operation and is routinely reprocessed. (Also referred to as revert scrap, millbroke, or turn-around scrap);

(ii) "(Prompt) Industrial scrap" shall mean scrap that is generated during the manufacture of a product;

(31) "Secondary material" shall mean a material that is utilized in place of a primary or raw material in manufacturing a product;

(32) "Separation" shall mean the systematic division of solid waste into designated components;

(33) "Solid waste" shall mean useless, unwanted, or discarded material with insufficient liquid content to be free flowing;

(34) "Solid waste management" shall mean the purposeful, systematic control of the generation, storage, collection, transport, separation, processing, recovery and disposal of solid waste;

(35) "Storage" shall mean the interim containment of solid waste, in an approved manner, after generation and prior to ultimate disposal;

(36) "Transport" shall mean the movement of solid waste subsequent to collection.

Section 4. [Powers and Duties of the Department.] The Department of [] shall have the responsibility for the administration and enforcement of the Act. It shall have the power and its duties shall be to:

General

(1) administer the state solid waste management program pursuant to provisions of this Act;

(2) provide technical assistance to municipalities, agencies, and other persons, and cooperate with appropriate federal agencies and private organizations in carrying out the duties under this Act;

(3) encourage and recommend procedures for the utilization of self-financing solid waste management systems and inter-municipal agencies in accomplishing the desired objective of this Act;

(4) promote the planning and application of source recovery systems which preserve and enhance the quality of air, water, and land resources;

(5) serve as the official state representative for all purposes of the Federal Solid Waste Disposal Act, (P.L. 91-512), or as subsequently amended, and for the purpose of such other state or federal legislation as has been or may hereafter be enacted to assist in the management of solid waste;

Planning

(6) survey the solid waste management practices within the State, and prepare a solid waste management plan for adoption by the Governor. Such a plan shall also assess the feasibility of inter-municipal, self-financing management of solid waste;

(7) require and review solid waste management plans from each municipality or combination thereof;

(8) develop, in cooperation with appropriate state agencies and other interested parties, a program for the collection, storage and disposal of abandoned vehicles;

Regulation and Enforcement

(9) prepare, adopt, promulgate, modify, repeal, and enforce rules and regulations governing solid waste storage, collection, transport, separation, processing, and disposal, in order to conserve the air, water and land resources of the State, protect the public health, prevent environmental pollution and public nuisances, and enable it to carry out the purposes and provisions of this Act and the adopted state solid waste management plan;

(10) establish the procedures for permit application, review and issuance, including fees therefor, governing the design and operation of solid waste management facilities and systems;

(11) prepare, issue, modify, revoke and enforce orders, after investigation, inspection, notice and hearing, prohibiting violation of any of the provisions of this Act or of any rules and regulations issued pursuant thereto and requiring the taking of such remedial measures for solid waste management as may be necessary or appropriate to implement or effectuate the provisions and purposes of this Act;

(12) encourage, and cooperate with, appropriate federal authorities to secure compliance with applicable federal statutes, orders, and guidelines for solid waste management activities conducted, permitted, or licensed by federal executive agencies within this State;

Operation and Financing

(13) designate intra- or inter-municipal agencies as responsible for solid waste management within appropriately defined jurisdictional boundaries in accordance with the adopted state and municipal solid waste management plans and the laws of this State;

(14) assume responsibility for, or enter into contract with, any state agency, municipality or person for the planning, design, construction, operation or maintenance of solid waste management facilities or

61 system reimbursement for all costs of such activities shall be through
62 user charges;

63 (15) acquire personal or real property or interest in by gift,
64 lease, purchase, eminent domain or easement, for the purpose of pro-
65 viding sites for solid waste management activities;

66 (16) develop and encourage utilization of service charge based
67 on methods of financing local solid waste management systems to equi-
68 tably distribute all system costs among users.

1 Section 5. [Municipal Ordinances.] Any municipality may enact
2 and enforce a municipal solid waste management ordinance if such ordinance
3 is substantially identical to this Act and the rules and regulations
4 authorized herein.

1 Section 6. [Local Planning.]

2 (a) Each municipality or combination of municipalities shall, within
3 [] months after the adoption of the state solid waste management
4 plan, survey the solid waste management practices within its boundaries
5 and prepare a solid waste management plan to be compatible with the state
6 plan, showing therein all present management activities and recommended
7 management activities for future use, taking into consideration popula-
8 tion growth, solid waste generation, land development regulations and
9 overall system management including organizational, financing, and regu-
10 latory capabilities. The plan will provide 10- and 20-year qualitative
11 and quantitative projections of the solid waste expected to be generated
12 within the jurisdiction from residential, commercial, industrial and
13 agricultural sources, and shall be submitted to the department for its
14 review and approval prior to its local adoption and implementation. The
15 plan developed under this section must be designed to be operational
16 and when implemented must be an environmentally acceptable and economi-
17 cally efficient solid waste management system.

18 (b) Each municipality shall adopt and begin implementing the com-
19 prehensive solid waste management plan within [] months after
20 approval by the department.

1 Section 7. [Inter-Municipal Solid Waste Management.]

2 (a) Municipalities with contiguous territories within or adjacent
3 to this State may, by ordinance or contract, join in an inter-municipal
4 solid waste management agency, setting out in said ordinance or contract:
5 (1) The expiration date of such agency.

6 (2) The financial responsibility of each member jurisdiction to
7 the agency.

8 (3) The extent of services each member will contribute to the
9 agency.

10 (4) The establishment of solid waste management services includ-
11 ing the setting, revision and collection of service charges, or;

12 (5) The use of private persons for solid waste management service
13 contracts, including therein:

14 (i) Exclusive territories,

15 (ii) Regulation of charges,

16 (iii) Contract terms,

17 (iv) Performance bonds, based on the average annual sum paid
18 over the contract term, and

19 (v) Such other terms as are found desirable and consistent with
20 the provisions of this Act.

21 (b) All municipalities entering into such a solid waste management
22 agency agreement shall not withdraw therefrom during the term of such
23 agreement. New members may enter such solid waste management agency by
24 majority agreement of members under conditions consistent with this
25 Act or under orders from the department.

26 (c) All proposed agreements under this section must be submitted
27 to and approved by the department prior to enactment.

1 Section 8. [Intra-Municipal Solid Waste Management.] The legis-
2 lative body of a municipality not participating in an inter-municipal
3 solid waste management agency shall form a solid waste management
4 agency to serve the area within its boundaries. Such agency is specifi-
5 cally authorized to:

6 (1) Subdivide the municipality, taking into consideration popula-
7 tion density, solid waste generation, recovery, processing, and disposal
8 facilities available and area comprehensive plans.

9 (2) Establish solid waste management services within each sub-
10 division, or;

11 (3) Enter into contract with private persons for solid waste
12 management services in each subdivision.

13 (4) Set, revise, and collect service charges based on the full
14 costs of providing services to users.

15 (5) Require a performance bond of private persons under (3),
16 such bond to be not less than the average annual sum paid over the
17 contract term.

1 Section 9. [Permits.]

2 (a) The director is hereby authorized to issue permits for solid
3 waste management (excluding recovery and recycling) facilities and sys-
4 tems, including design, operation, maintenance, substantial alteration,
5 modification, or enlargement. All such permits shall be nontransferable,
6 shall be for a term of [] year(s) and shall be subject to the fees
7 established by the department. All such permits so issued shall be con-
8 ditioned upon the observance of the laws of the State and the rules and
9 regulations authorized herein.

10 (b) All existing solid waste management activities shall comply
11 with the permit requirements of this Act within [] months of
12 the effective date of this Act.

(c) Each permit holder shall apply for the renewal of each permit held, upon forms provided by the department, not more than 90 days prior to the expiration date of each permit to be renewed and shall tender with the application a non-returnable fee as established by the department. All fees so paid shall be deposited in a separate fund, to be used to defray the cost of the administration of this Act.

(d) Municipalities of this State, including inter-municipal agencies authorized herein, are exempted from the fee provisions of this section.

(e) Each permit application and each permit renewal application shall be submitted with proof of a performance bond, in a sum established by the department, payable to the State and conditioned on the fulfillment by the permit holders of the requirements of this Act and the rules and regulations authorized herein. No performance bond required by this Act may be cancelled by the issuing company unless the department has received written notice thereof and there has been a lapse of 10 days between receipt of notice and cancellation date.

Section 10. [Inspections.] The department is hereby authorized to inspect all solid waste management activities, excluding recovery and recycling activities, at all reasonable times, to insure compliance with the laws of this State, the provisions of this Act and the rules and regulations authorized herein. It shall be unlawful for any person to interfere with such inspections.

Section 11. [Notice.] Any notice, order or other official correspondence affecting the rights of any person under this Act shall be delivered by personal service or sent by certified mail with a return receipt required to the address of such person as shown by the records of the department. The return receipt, signed by the addressee, or his agent, shall be conclusive proof of delivery.

Section 12. [Hearings.]

(a) Any person who received an order from the department as authorized by this Act and any municipality whose plan is disapproved by the department may, within 10 days of the date of receipt of such order or disapproval, file a notice of intent to appeal, setting forth in such notice a verified petition outlining the basis for such appeal.

(b) The director shall, not less than 30 days after receipt of such notice of appeal, hold a public hearing, at which time the person appealing may appear and present evidence in person or through counsel in support of his petition.

(c) The director is hereby authorized to administer oaths and to issue subpoenas to compel the attendance of witnesses and the production of evidence in all such hearings. Transcripts may be made by either the department or the person appealing.

(d) The director shall affirm, modify or revoke any action which is appealed and shall notify the appellant of his decision not more than 30 days after the conclusion of the hearing. Such notice shall be in writing and shall state the reasons for the decision.

(e) Any person may appeal such decision to the court of general jurisdiction of the county in which his principal place of business is located by filing with the department a written notice of such intent to appeal within 15 days of the notice in (d) and shall have a transcript of the proceedings upon paying the costs of such record provided such notice is received by the department within 15 days of the date of the notice required in (d).

Section 13. [Prohibited Activities.]

(a) It shall be unlawful for any person to:

(1) violate any provision of this Act or any rule, regulation, standard, or order issued pursuant to this Act;

(2) burn solid waste other than in a facility for which a permit has been issued pursuant to this Act;

(3) own, operate, or use a dump for the disposal of solid waste;

(4) place, or allow to be placed, any solid waste upon the roads, streets, public or private property contrary to the provisions of this Act;

(5) manage solid waste without a permit issued pursuant to this Act;

(6) store, collect, transport, process, or dispose of solid waste in such a manner as to degrade the environment, create a nuisance, create a health or safety hazard, or contrary to this Act.

(b) Each day of continued violation of this section or the provisions of this Act or rules and regulations authorized herein shall be deemed a separate offense.

Section 14. [Penalty.] Every person convicted of violating this Act or the rules and regulations authorized herein shall be subject to a fine not to exceed \$500 or imprisonment for not more than 6 months in a county jail, or both.

Section 15. [Injunction.]

(a) The department shall maintain an action to restrain the continued violation of the provisions of this Act or the rules and regulations authorized herein. Such right to injunctive relief is in addition to any other powers or penalties conferred by this Act.

(b) Such action shall be brought in the name of the State and shall be prosecuted by the Attorney General in the court of general jurisdiction in the county in which the violations occur.

Section 16. [Emergency Power.]

(a) In the event that the director presumes that a clear and present

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thr exists to the safety, health, or welfare of the people of this State or actions which reasonably may result in harm to the environment or create a nuisance, arising from the management of solid waste contrary to the provisions of this Act or the rules and regulations authorized herein, the director may seize such activity and take whatever measures he deems necessary to rectify such mismanagement of solid waste, any other provisions of this Act notwithstanding.

(b) The director may institute a civil action, in the name of the State, against the permit holder so seized, to recover the expenses incurred in eliminating such threat to the health and welfare of the people of this State, in the court of general jurisdiction in which the activity is located and the court may award treble damages where such permit holder is found to have acted willfully or wantonly in the design, operation, or maintenance of such activity.

Section 17. [Plats.] All persons operating a sanitary landfill under permits issued pursuant to this Act shall, upon completion of the sanitary landfill, file with the recorder of each county in which the sanitary landfill is located a plat of each site, together with a description of the waste placed therein.

Section 18. [Applicability to State Agencies.] State agencies shall comply with all provisions of this Act including planning, review, and permit requirements. State agencies may contract with any person to carry out their responsibilities under the Act. Such contractors shall also comply with the provisions of the Act.

Section 19. [Transport of Solid Waste.]

(a) Nothing in this Act shall be interpreted as limiting the free flow of solid waste across municipal or state boundaries in accordance with the rules and regulations issued pursuant to this Act.

(b) No municipality or agency of this State shall take any action to prevent such free flow of solid waste provided the transport or disposition of the solid waste is in accord with the provisions of the Act.

Section 20. [Resource Recovery Tax Incentive.]

Section [], "Expenditures for Recovered Resources," is added to the [Revenue and Taxation Code] to read:

(a) General. There shall be allowed as a deduction the percentages specified in subsection (b) of the expenditures made by a taxpayer during the taxable year to purchase recovered resources, excluding home scrap to be recycled.

(b) Percentages allowed. The percentages of expenditures referred to in subsection (a) are as follows:

(1) [] percent for recovered metals except those referred to in paragraph (2) following;

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(2) [] percent for recovered copper, iron, steel, gold, and silver;

(3) [] percent for recovered paper, paper products and textiles;

(4) [] percent for all other recovered resources.

(c) Notwithstanding any other provision of this section, the deduction provided shall not be allowed to any taxpayer for any taxable year in which the department, by regulation and after public hearings, prescribes that allowance of such deduction with respect to any specific recovered resource during that taxable year should be suspended as not required to:

(1) advance the resource recovery and recycling purposes of this Act; and

(2) alleviate the depletion of any natural resource.

Section 21. [Amortization of Recovery or Recycling Facilities.]

Section [], "Amortization of Recovery or Recycling Facilities," is added to the [Revenue and Taxation Code] to read:

(a) Allowance of deduction. Every taxpayer, at his election, shall be entitled to a deduction with respect to the amortization of the amortizable basis of any recovery or recycling facility as defined in subsection (e).

(b) Amount of deduction. For any taxable year, the deduction shall be an amount determined by amortizing ratably over a period of [] years the amortizable basis of the recovery or recycling facility. The amortization deduction provided shall be in lieu of the depreciation deduction with respect to such facility provided by Section []. The [] year period shall begin, as to any such facility, at the election of the taxpayer, with the year following the year in which such facility was completed or acquired, or with the succeeding taxable year.

(c) Election of amortization. The election of the taxpayer to take the amortization deduction shall be made by filing with the [Director of the Department of Revenue and Taxation] or his delegate, in such manner or form as the [Department of Revenue and Taxation] may by regulations prescribe, a statement of such election.

(d) Termination of amortization deduction. A taxpayer who has elected under subsection (c) to take the amortization deduction provided in subsection (a) may, at any time after making such election, discontinue the deduction with respect to the remainder of the amortization period, such discontinuance to begin as of the beginning of any year specified by the taxpayer in a notice in writing filed with the [Department of Revenue and Taxation] before the beginning of such year. The depreciation deduction provided by Section [] shall be allowed, beginning with the first year as to which the amortization deduction does not apply.

(e) Definitions. For purposes of this section:

(1) "recovery or recycling facility" means an improved, new, or newly acquired facility which is used by the taxpayer to recover or

recycle energy or materials from solid waste.

(2) "amortizable basis" means that portion of the adjusted basis (for determining gain) of a facility which may be amortized under this section.

Section 22. [State Procurement Incentives for Recovered Resources and Recycled Materials.]

Section []. "Procurement of Recovered Resources and Recycled Materials," is added to the [State Procurement Code] to read:

(a) All procurement specifications currently utilized by this State shall be reviewed by [the appropriate department] to eliminate wherever feasible discrimination against the procurement of recovered resources and recycled materials. Such review shall be completed on or before [].

(b) Incentives shall be provided wherever feasible in all procurement specifications issued by this State, to provide for the maximum possible use of recovered resources and recycled materials.

(c) The following words shall be added wherever feasible to procurements issued by this State: "in accordance with the policy of this State to reduce solid waste by providing an incentive for resource recovery and recycling, this procurement is issued with a requirement that all material supplied hereunder contain [] percent by weight of recovered resources or recycled materials excluding home scrap."

Section 23. [Equitable Transport Rates.] The [Public Utilities Commission] is hereby directed to establish rates which do not discriminate against the transport of solid waste, recovered resources, or recycled materials.

Section 24. [Governor's Advisory Council on Solid Waste Management and Recycling.]

(a) Establishment and Membership. There is hereby established in the Office of the Governor a "Governor's Advisory Council on Solid Waste Management and Recycling" (hereinafter referred to in this section as the "Council"). The Council shall consist of one representative appointed by the Governor from each of the following categories:

- (1) Private solid waste management organization
- (2) Private secondary materials organization
- (3) Private environmental conservation organization
- (4) Public solid waste management agency
- (5) Community resource recovery organization
- (6) Municipal government
- (7) State department of environmental protection
- (8) State department of revenue and taxation
- (9) State public utilities commission
- (10) State planning agency
- (11) Consulting engineering organization

(12) Financial institution

(13) Transportation industry

(14) The public at large.

(b) Term. All members shall be appointed within 60 days of the effective date of this Act.

(c) Compensation. All members of the Council shall serve without compensation, but shall be reimbursed for necessary and proper expenses incurred in the performance of their official duties.

(d) Not more than 30 days after the appointment of the Council the Governor shall call a meeting at which time the Council shall elect its officers and establish procedures for the conduct of its business.

(e) Meetings. The Council shall meet not less than once in each quarter of each year. Emergency meetings may be called by the Council under conditions set forth in procedures, or by the Governor.

(f) Powers and Duties of the Council. The Council shall:

(1) recommend to the appropriate state agency rules and regulations affecting solid waste management, resource recovery, and recycling within this State;

(2) recommend legislation to encourage the efficient management of solid waste, resource recovery, and recycling within the State;

(3) study the effects of existing public policies within the State, including subsidies, economic incentives and disincentives, percentage depletion allowances, transportation policies, capital gains treatment, zoning policies, licensing practices, procurement practices, fees and the like, upon recovery and recycling and report its findings to the Legislature and the Governor annually;

(4) recommend, to the appropriate state agency, special studies and projects which are needed to further economic solid waste management, resource recovery, and recycling.

Section 25. [Solid Waste Management and Recycling Impact Statements.] The Legislature of this State directs that all municipalities of this State:

(1) utilize a systematic, interdisciplinary approach to carry out their functions in such a way as to consider the effect of any actions they may take on solid waste management or recycling;

(2) report to the Governor's Advisory Council on solid waste management and recycling on those actions which significantly affect this State's ability to recover and recycle resources from solid waste; and include in every recommendation or report on proposals for legislation and other major state actions significantly affecting the quality of the human environment, solid waste management or recycling, including, but not limited to, procurement policies, transportation regulations, licenses, taxes, fees, reporting and administrative requirements, zoning actions affecting solid waste management and recycling, and the like, a detailed statement by the responsible official on:

(i) .e environmental impact of the proposed action;
 (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented;
 (iii) the relationship between local short term uses of man's environment and the maintenance and enhancement of long term productivity; and
 (iv) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented;
 (3) prior to making any detailed statement, the responsible official shall consult with and obtain the comments of any state agency which has jurisdiction by law or special expertise with respect to any environmental, solid waste management or recycling impact involved. Copies of such statements and the comments and views of the appropriate agencies shall be made available to the Council and the public and shall accompany the proposal through its consideration.

Section 26. [Miscellaneous Provisions.] [Repealer, Savings Clause, etc.]

Section 27. [Severability Clause.] The provisions of this Act are severable and if any provision or part thereof shall be held invalid or unconstitutional or inapplicable to any person or circumstances, such invalidity unconstitutionality or inapplicability shall not affect or impair the remaining provisions of this Act.

Section 28. [Effective Date.] This Act is hereby declared an emergency provision to protect the health and welfare of the inhabitants of the State and shall take effect immediately upon its passage.

Model State Toxic Waste Disposal Act

Suggested Legislation

Source: The Council of State Governments, 1972
(Title, enacting clause, etc.)

Title I. [General Provisions]

Section 1. [Authority.] The director of the [Division of Water Quality Control, Department of Environmental Protection] is hereby vested with the authority and responsibility for control of toxic waste disposal within the State of [] .

Section 2. [Prohibited Acts.] No toxic waste disposal shall be made, and no toxic waste disposal system shall be constructed or be put into operation:

(1) unless such disposal system shall conform to the requirements of this Act and any applicable rules, regulations, and guidelines promulgated hereunder, and any applicable federal law, rules, regulations, or guidelines; and

(2) for categories of disposal classified as subject to permit under Section 4 of this Act, prior to issuance by the director of a permit authorizing such disposal, and containing such terms and conditions as the director may deem appropriate.

Section 3. [Definitions.]

(a) "Director" means the director of the [Division of Water Quality Control within the Department of Environmental Protection], specifically vested with the authority and responsibility for control of toxic waste disposal within this State.

(b) "Toxic waste" means any substance or combination of substances which, in the judgment of the director, consistent with any applicable federal law, may pose a substantial present or potential hazard to human health because such substances are non-degradable or persistent in nature, or because they can be biologically magnified, or because they can be lethal, or because they otherwise cause or tend to cause detrimental cumulative effects.

(c) "Well injection disposal" means the act of emplacing, or a system for the emplacement of toxic wastes within the earth by means of an injection well.

(d) "Toxic waste disposal" means well injection disposal or, except as regulated by the State Water Quality Permit Act, the ultimate disposition onto the land of any toxic waste.

(e) "Injection well" means any well that is drilled, cored, bored, washed, driven, dug, jetted, or otherwise constructed or modified for

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well injection disposal.

(f) "Subsurface" means below the land surface.

(g) "Subsurface water" or "ground water" means that water beneath the surface of the ground that may move to springs or wells.

(h) "State waters" means any and all waters, public or private, on or beneath the surface of the ground, including but not limited to subsurface water, ground water and formation water, which are contained within, flow through, or border upon this State or a portion thereof.

(i) "Monitor well" means any well that is drilled, cored, bored, or otherwise constructed to observe the operation or results of a toxic waste disposal system.

(j) "Zone of influence" means the spatial extent of migration or dispersion of injected or otherwise disposed fluid, and includes the spatial extent of detectable changes in the biology, chemistry, pressure, or temperature of the environment.

(k) "Person" means any individual, owner, operator, partnership, firm, association, joint venture, public or private corporation, trust, estate, commission, board, public or private institution, utility, cooperative, municipality, or any other political subdivision of this State, any interstate body, or any other legal entity.

(l) "Owner" means any person owning or leasing the surface or subsurface for purposes of constructing and operating a toxic waste disposal system.

(m) "Operator" means the designated agent of the owner who operates and manages a toxic waste disposal facility for the owner.

(n) "Workover" means any procedure such as acidizing, fracturing, repairing or replacing casing, tubing or packers, and perforating additional zones, intended to restore or improve the ability of an existing injection well or injection formation to receive injected fluids.

(o) "Toxic waste disposal system" means all surface and subsurface equipment and installations for well injection disposal or other toxic waste disposal, as well as the formations within the zone of influence.

Section 4. [State Toxic Waste Disposal Plan.] After consulting and in cooperation with appropriate federal, state, local governmental and other public and private organizations or persons, the director shall promulgate and publish a comprehensive plan for control of toxic waste disposal on or under non-federal lands. Such plan shall be consistent with any applicable federal law or law of this State and include:

(1) regulations generally applicable to all toxic waste disposal within this State;

(2) classifications by type of waste, disposal locations, and disposal procedure, of those acts of toxic waste disposal requiring permits pursuant to Section 5 of this Act;

Definition should conform to existing state law.

(3) such regulations as are deemed necessary by the director to implement his authority to require monitoring, reporting, and inspection pursuant to Section 11 of this Act;

(4) guidelines prescribing the manner and means necessary to plan for and carry out acts of toxic waste disposal subject to this Act including, but not limited to:

(i) geological and hydrological testing requirements;

(ii) disposal procedures;

(iii) performance standards related to injection facilities such as wells and well casing, and monitoring systems;

(iv) distribution and proximity of disposal or storage sites in specified geographic areas and types of geologic formations or situations;

(v) pretreatment requirements; and

(vi) back-up facility requirements providing for the safe shutdown of the toxic waste disposal system in the event of a temporary failure;

(5) regulations prescribing the information to be supplied by the permit applicant as part of the applicant's project plan as shall be deemed necessary by the director to determine the advisability of granting or denying a permit, imposing terms and conditions upon its issuance, and otherwise to effectively monitor and control the proposed toxic waste disposal.²

Section 5. [Submission of Project Plans; Permits; Hearings.]

(a) A project plan shall be submitted to the director for review and approval prior to the initiation of construction or operation of any type of toxic waste disposal system or activity designated under Section 4(2) of this Act. Such plan shall be submitted utilizing such standard forms of application and supplying such engineering, geological and other information as may be required pursuant to Section 4 of this Act. In some cases, the data required before the plan may be acted upon by the director may not be available to the permit applicant without the expenditure of substantial funds for the acquisition of detailed data. If sufficient data are not available, the director may in his discretion permit a preliminary project plan to be submitted and a review be made to determine the general feasibility of the project, prior to submission of a final project plan sufficient to enable a determination by the director hereunder.

(b) Upon presentation of satisfactory evidence by the owner or operator that the requirements of this Act, of the State Toxic Waste Disposal Plan, and of any rules, regulations, or guidelines promulgated thereunder have been and will be satisfied and that the proposed oper-

² Annexed to this model is a list of information believed necessary to present adequately the factors which should be considered before approving or disapproving a project plan for well injection disposal of toxic wastes.

ation of a toxic waste disposal system will comply with such requirements, a permit may, after opportunity for public hearing, be issued by the director authorizing well injection or toxic waste disposal for a period not to exceed 5 years and upon such terms and conditions as the director may deem appropriate.

(c) Prior to issuance of a permit under this section, notice shall be given to mineral and surface land owners within a 2-mile radius of the proposed disposal site. These owners may request a public hearing upon the permit application by filing a written petition, in such form as the director may prescribe, within 60 days of receipt of notice of the application. If the expected zone of influence of the proposed disposal extends beyond the land included within a 2-mile radius of the proposed disposal sites, then notification shall be given to those mineral and surface owners within the expected zone of influence.

(d) Notice shall also be given, prior to issuance of any permit under this section, to each State which may be adversely affected, with respect to public health, by any toxic waste disposal to be permitted by this State. Such adversely affected State or States may request a public hearing upon the permit application by filing a written petition, in such form as the director may prescribe, within 60 days of receipt of notice of the permit application.

(e) In addition to the notice required by subsections (c) and (d) of this section, the director shall issue public notice of all permit applications and shall, to the extent practicable, furnish a copy of this notice to all interested persons. The director may, in his discretion and in the public interest, hold a public hearing and allow participation by interested persons, upon request by any such person.

Section 6. [Renewal of Permits.] Upon expiration of a permit the director may, pursuant to such rules and regulations as he may prescribe, issue a new permit not to exceed another 5-year term. The director may in his discretion waive one or more of the requirements of Section 4 relating to the contents of a project plan.

Section 7. [Zone of Disposal.] No zone or interval other than the zone approved by the director shall be used by the owner or operator of the system for disposal purposes. If additional zones or intervals are required, other than those specified in the original proposal, then prior approval shall be obtained from the director before the additional zone or intervals are used.

Section 8. [Workover.] Workover procedures shall not be performed without prior approval of the director and then only to the extent authorized by the director.

Section 9. [Disposal or Injection.] All drilling, completion, preparation, and operating procedures for toxic waste disposal and in-

Toxic Waste Disposal Act

3 monitoring such disposal shall be in the manner approved by the director,
4 and volumes of toxic wastes disposed shall not exceed that specified in
5 any permit issued by the director, nor shall toxic waste other than that
6 specified be disposed without prior approval of the director.

1 Section 10. [*Abandonment.*] No toxic waste disposal system sub-
2 ject to this Act shall be abandoned or plugged unless prior approval has
3 been obtained from the director, and such abandonment or plugging proce-
4 dures shall be as directed by the director. The operation of monitoring
5 equipment, and such other monitoring procedures as may be prescribed
6 pursuant to Section 11 of this Act, shall continue after disposal has
7 terminated for as long as the director may direct.

1 Section 11. [*Monitoring, Recording, and Reporting.*] The director
2 may, by regulation, order, permit, or otherwise, require the owner or
3 operator of any disposal system to:

- 4 (1) establish and maintain such records;
- 5 (2) make such reports;
- 6 (3) install, calibrate, use, and maintain such monitoring equipment
- 7 or methods (including, where appropriate, the drilling of additional
- 8 holes into the formation and installation of analytical equipment in
- 9 monitoring wells);
- 10 (4) sample such toxic waste being disposed (in accordance with
- 11 such methods, at such locations, at such intervals, and in such manner
- 12 as the director shall prescribe); and
- 13 (5) provide such other information relating to the waste disposal
- 14 as is necessary to determine the existence, nature, and frequency and
- 15 effects of any disposal of wastes subject to the provisions of this Act.

1 Section 12. [*Inspection and Entry.*] To carry out the purposes of
2 this Act or any rule, regulation, order, or permit issued thereunder, the
3 director or his authorized representative, upon presentation of his cre-
4 dentials or other written notice of his inspection authority:

- 5 (1) shall have a right to entry at reasonable times to, upon, or
- 6 through any land or premises on or in which any toxic waste disposal
- 7 originates or takes place or in which any records are required to be
- 8 maintained;
- 9 (2) may at reasonable times have access to and copy any records re-
10 quired to be maintained; and
- 11 (3) may inspect any monitoring equipment or method.

1 Section 13. [*Public Access to Information.*] Any records, reports,
2 or information obtained under this Act shall be available to the public
3 for inspection and copying: *provided*, that upon a showing satisfactory
4 to the director by any person that such records, reports, or information,
5 or any part thereof (other than information describing the waste disposed
6 in a toxic waste disposal system), would, if made public, divulge methods

Toxic Waste Disposal Act

7 or processes entitled to protection as trade secrets - such person, the
8 director shall consider, treat, and protect such record, report, or in-
9 formation, or part thereof as confidential; *provided further, however*,
10 that any such record, report, or information accorded confidential
11 treatment may be disclosed or transmitted to other officers, employees,
12 or authorized representatives of the State or the United States concerned
13 with carrying out this Act or when relevant in any proceeding under
14 this Act.

1 Section 14. [*Emergency Orders.*]

2 (a) Whenever the director finds that an act prohibited by Section 2
3 of this Act (whether or not authorized by a permit issued under this Act
4 otherwise or in compliance with this Act) or an existing toxic waste dis-
5 posal site presents an imminent and substantial hazard to human health,
6 the director may issue an emergency order requiring appropriate remedial
7 or corrective measures to be taken.

8 (b) Upon issuance of an emergency order under subsection (a) of this
9 section, the director shall immediately seek a temporary restraining order
10 and thereafter, if deemed necessary by the director, a preliminary or
11 permanent injunction to enjoin the acts subject to the emergency order.

12 (c) Any emergency order issued by the director under subsection (a)
13 of this section shall lapse and be of no effect upon a determination by
14 the court of the director's application for a temporary restraining
15 order, or 3 days after the issuance of the emergency order, whichever
16 occurs earlier.

1 Section 15. [*Financial Responsibility.*] Any person or persons
2 seeking a permit under this Act for a proposed injection well or toxic
3 waste disposal system must, before such proposal may be approved by the
4 director, affirmatively evidence such financial responsibility as the
5 director may request to assure present and continuing compliance with
6 this Act. The evidence of financial responsibility required by this sec-
7 tion shall consist of a deposit with the treasurer of the State of cash,
8 surety bond, or other securities in such amount and with and under such
9 condition as the director may require, to assure that upon abandonment,
10 cessation, or interruption of the use of a disposal system, all appro-
11 priate measures are taken to prevent present or future damage to state
12 waters. After initial of a permit pursuant to Section 5 of this Act, a
13 similar showing of financial responsibility shall be made at least
14 yearly thereafter, and to the extent as from time to time may be required
15 by the director.

1 Section 16. [*Other Regulatory Agencies.*] Compliance with the
2 provisions of this Act is no way relieves the owner or operator from full
3 and complete compliance with all applicable rules and regulations of other
4 state regulatory agencies, except that compliance with this Act shall
5 constitute compliance with the requirements of the [State Water Quality
6 Permit Act].

1 Section 17. [Injunctions; Civil Penalty.] Wherever the director
2 finds that any person is in violation, or is about to violate, any pro-
3 vision of this Act, the State Toxic Waste Disposal Plan, or any rule,
4 regulation, or guideline promulgated thereunder, the director may:

5 (1) institute a civil action for appropriate relief, including a
6 permanent or temporary injunction; and

7 (2) subsequent to a period of 15 days after notice of violation,
8 assess any person failing to correct such violation, after opportunity
9 for public hearing held on the record with opportunity for cross-examina-
10 tion, a civil penalty of not more than \$25,000 for each day of continuing
11 violation after the said 15 days.

1 Section 18. [Criminal Penalties.]

2 (a) Except as provided in subsection (b) of this section, any person
3 who willfully [or negligently] violates any provision of Section 2 of this
4 Act, or the terms or conditions of any permit issued under Section 5 of
5 this Act, shall be punished by a fine of not more than \$25,000 per day
6 of violation or by imprisonment for not more than one year, or by both.
7 If this conviction is for a violation committed after a first conviction
8 of such person under this subsection, punishment shall be by a fine of not
9 more than \$50,000 per day of violation, or by imprisonment for not more
10 than 2 years, or by both.

11 (b) Any person who knowingly makes any false statement, represen-
12 tation, or certification in any application, record, report, project
13 plan, or other document filed or required to be maintained under this
14 Act, or by any permit, rule, regulation, guideline, or plan issued or
15 promulgated under this Act, shall upon conviction, be punished by a
16 fine of not more than \$10,000, or by imprisonment for not more than 6
17 months, or by both.

1 Section 19. [Annual Report.] One year after the effective date
2 of this Act, and annually thereafter, the director shall submit, through
3 the Governor, a report to the State Legislature and any appropriate federal
4 authority if required, summarizing the actions taken under this Act, and
5 the effectiveness of such actions and such information and recommenda-
6 tions, including legislative recommendations, as he deems appropriate.

1 Section 20. [Repealer.] All laws or parts of laws inconsistent
2 with the provisions of this Act are hereby repealed to the extent of any
3 such inconsistency.

1 Section 21. [Severability.] The provisions of this Act are
2 severable. If any provision of this Act shall be held to be unconstitu-
3 tional or invalid for any reason, such unconstitutionality or invalidity
4 shall not affect the remaining provisions of this Act.

1 Section 22. [Effective Date.] This Act shall take effect . . .

Annex

The following list of requirements concerning information to be supplied by a permit applicant (see Section 4(4) of the model statute) is suggested in order to elicit sufficient information to be considered before approving or disapproving a project plan for well injection.

(a) An accurate plat showing location and surface elevation of proposed injection well site, surface features, property boundaries, and surface and mineral ownership (2 inches per mile).

(b) A map indicating location of water wells and all other wells, mines, or artificial penetrations, including but not limited to oil and gas wells and exploratory or test wells, showing depths, elevations and the deepest formation penetrated within the expected zone of influence of the proposed project. Exhaustive search shall be made to locate such penetrations. Well and abandonment records for all oil and gas tests, and water wells should accompany the map.

(c) A map indicating vertical and lateral limits of potable water supplies which would include surface water supplies and subsurface aquifers containing water with less than 10,000 ppm total solids, as well as available amounts and present and potential uses of these waters.

(d) Mineral resources present or believed to be present in area of project and the effect of this project on present or potential mineral resources in the area.

(e) Maps and cross sections illustrating detailed geologic structure and a stratigraphic section (including formations, lithology, and physical characteristics) for the local area and generalized maps and cross sections illustrating the regional geologic setting of the project.

(f) Description of the chemical, physical, and biological properties and characteristics of the fluids to be injected.

(g) Maps of the potentiometric surface of the injection horizon proposed injection well and those aquifers immediately above and below the injection horizon and copies of all drill-stem tests, extrapolations and data used in making such maps.

(h) Location and nature of present or potentially useable minerals from the zone of influence.

(i) Volume, rate, and injection pressure of the fluid.

(j) The following geological and physical characteristics of the injection interval and the overlying and underlying impermeable barriers should be determined and submitted:

- (1) thickness;
- (2) areal extent;
- (3) lithology;
- (4) grain mineralogy;
- (5) type and mineralogy of matrix;
- (6) clay content;
- (7) clay mineralogy;
- (8) effective porosity (including an explanation of how determined);
- (9) permeability (including an explanation of how this was determined);
- (10) coefficient of storage of aquifer;

Toxic Waste Disposal Act

- (11) amount and extent of natural fracturing (if practicably determinable);
 - (12) location, extent and effects of known or suspected faulting;
 - (13) extent and effects of natural solution channels (if practicably determinable);
 - (14) fluid saturation;
 - (15) formation fluid chemistry (including local and regional variations);
 - (16) temperature of formation (including an explanation of how determined);
 - (17) formation and fluid pressures (including original and modifications resulting from previous fluid withdrawals);
 - (18) fracturing gradients;
 - (19) osmotic characteristics of rock and fluids both comprising and contiguous to the reservoir;
 - (20) diffusion and dispersion characteristics of the waste and the formation fluid including effect of gravity segregation;
 - (21) compatibility of injected waste with the physical, chemical, and biological characteristics of the reservoir; and
 - (22) injectivity profiles.
- (k) The following engineering data shall be supplied:
- (1) diameter of hole and estimated total depth of well;
 - (2) type, size, weight, and strength of all surface, intermediate, and injection casing strings;
 - (3) specifications and proposed installation of tubing and packers;
 - (4) proposed cementing procedures and type of cement;
 - (5) proposed coring program;
 - (6) proposed formation testing program;
 - (7) proposed logging program;
 - (8) proposed artificial fracturing or stimulation program;
 - (9) proposed injection procedure;
 - (10) plans of the surface and subsurface construction details of the system including a diagrammatic sketch of the system (including but not limited to pumps, well head construction, and casing depth);
 - (11) plans for monitoring;
 - (12) expected changes in pressure, rate of native fluid displacement by injected fluid, directions of dispersion, and zone affected by the project.

The Council of State Governments (continued)

Other publications potentially relevant to the general topic of solid waste management and to the specific areas of resource recovery for energy and hazardous waste management include:

Integration and Coordination of State Environmental Programs--This report discusses mechanisms by which states coordinate and manage interrelated environmental programs. Results of a survey of all environmental programs in all 50 states, and of the officials who operate those programs, are reported. Guidelines and recommendations for development of closer relationships among environmental programs are presented.

State Environmental Issues Series--Energy Conservation: Policy Considerations for the States--Results of research sponsored by the National Science Foundation on the potential for this type of energy policy on the part of the States. The report reviews the energy problem from various viewpoints, discusses state policies aimed at energy conservation, and examines the potential for energy conservation in the electric utility and building industries.

Environmental Quality and State Government--Potential State-level activities for improving environmental quality are discussed, including actions in the areas of water and air quality, solid waste management, pesticide controls, and consolidation of environmental functions.

Organizations
Counterpart Affiliations

National Association of Counties (NACo)
1735 New York Avenue, N.W.
Washington, D.C. 20006

(202) 685-9577

Tom Bulger, Solid Waste Project Director

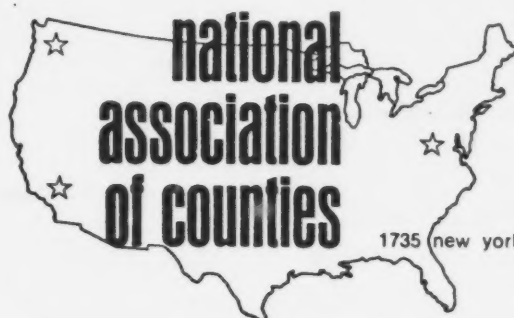
Through this organization materials particularly relevant to organization and management of resource recovery systems at the county level are available. Information packets have been prepared on the following topics: Economic Feasibility of Resource Recovery, Financing Alternatives for Resource Recovery, Rural Solid Waste, and Sludge Management. Materials in these packets include: (1) Briefing memoranda prepared by NACo summarizing the current state-of-knowledge for some of the topic areas. (An example of one such briefing memo on financing of resource recovery is included on the following pages.); (2) Several reports prepared by NACo: Why Snohomis County Washington, Developed a County-Wide Solid Waste System; Equipment Sharing: A Solution for Rural Counties; and Multi-County Approaches to Solid Waste Recovery; (3) Pertinent materials from EPA. By sifting through the vast quantity of materials available from EPA for those most relevant to counties -- and particularly rural areas -- and by summarizing current knowledge in these areas of concern, NACo's research staff can save the potential user a not-inconsiderable amount of time. NACo also conducts workshops on solid waste at various times and locations around the country.

In addition to "repackaging" and disseminating information on solid waste, this organization also performs research. Their research foundation (NACoRF), in cooperation with the International City Management Association (ICMA), is currently developing an information base regarding county government involvement and activities in solid waste management. In mid-1976 they conducted a telephone survey of over 500 county-level governments. The survey explored four areas of solid waste activities: (1) sanitary landfill and general operations including intergovernmental activities, (2) sludge disposal, (3) hazardous waste, and (4) resource recovery. Questions were asked regarding nature of activities and involvement in each of these areas, organizations and management, regulations, difficulties encountered in each of these areas, sources of financing, and future plans. Results are currently being tabulated and a report is expected to be ready soon. This study should fill an important gap in existing information regarding county-level involvement in this field.

NACo also performs research and special reports under grants from various government agencies. One such report, prepared for EPA, is

Organizations
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included in the materials packet: Basic Issues on Solid Waste Management Affecting County Government, May 1973. This report was the result of the work of a 13-member task force of county officials established by NACo to identify basic issues concerning solid waste and make recommendations for action.



1735 new york avenue, n.w., washington, d.c. 20006

(202) 785-9577

SOLID WASTE INFORMATION * SOLID WASTE INFORMATION * SOLID WASTE INFORMATION
FACT SHEET

FINANCING RESOURCE RECOVERY

Your county is considering resource recovery. You're examining the waste stream, analyzing the markets and looking at different technologies. You are also thinking WHAT KIND OF FINANCING IS AVAILABLE?

This fact sheet gives you brief descriptions of the alternatives available, and the accompanying materials provide more detailed information on financing at the local level. A current listing of solid waste publications available from the Environmental Protection Agency is also included.

CURRENT REVENUE FINANCING

Pay-as-you-go

This, the least complex method of financing a capital project, uses cash from property taxes and/or other revenues. Since cash funds from these sources are usually limited, they are usually used for very small projects or portions of larger projects.

Parties involved: locality only

Advantages

- No interest charges
- Avoids special elections

Disadvantages

- Limited source of funds

Grants, Revenue Sharing

Little federal money either in the form of grants or loans, is presently available for financing resource recovery projects. Many communities do use revenue sharing funds to supplement other sources for capital expenditures. Some states, however, provide planning and construction grants, loans, or other financial assistance.

Parties involved: locality, state or federal agency

Advantages

- Little or no interest payments
- No drain on current revenues
- No election

Disadvantages

- Limited source of funds

SHORT TERM FINANCING

Bank Loans

This device involves borrowing primarily for short term periods, such as in times of heavy cash payouts when budget reserves are low. The loan may be paid back when tax revenues are collected. Interest on the payments is low because payments are, by law, tax free to the bank, and the resulting savings are passed on to the locality in the form of a low charge.

Parties involved: locality, bank

Advantages

- Simplicity
- Low interest level

Disadvantages

- Restricted spending; loan repayment may itself drain budget

LONG TERM FINANCING

General Obligation Bonds

This is an arrangement that guarantees repayment of interest and principal on the bonds by pledging the full revenue-making capacity of the locality. The "full faith and credit" guarantee makes it the lowest interest, long term borrowing source available to a locality. Interest is tax-exempt. The bond issue may include more than one project, and often involves many smaller projects. Minimum issue is \$500,000 because of fixed front-end transaction costs. Debt ceilings, constraints which limit the amount of general obligation debt a locality may issue vary, but are generally a percentage of area property values. Repayment is usually planned by a serial issue in which principal is paid back over the full term of the loan. Voter approval is required on most issues.

Parties involved: locality, bank or investment banker, bond counsel

Advantages

- Lowest interest charge
- Tax exempt
- Generalized issue; can finance several projects
- Good for smaller communities with smaller projects
- Easy to market

Disadvantages

- \$500,000 minimum
- Funds for one project may be usurped by another
- Only localities with revenue-making capacity eligible
- Voter approval necessary; campaigns, much time often necessary to gain approval

Municipal Revenue Bonds

This bond is limited to a single project and is backed only by the project's revenue. The risk factor is greater than for GO bonds, so the interest charge is higher. Usually the issue is negotiated with one underwriting firm. Bond placement requires a detailed project analysis risk and revenues. Due to transaction costs, minimum issue is usually \$1 million. The ceiling is unlimited as the project revenues are expected to pay for the costs.

Parties involved: locality, bond counsel, investment banker

Advantages

- Low tax exempt interest
- Voter approval not required
- Project revenues pay for the bond
- Municipal debt ceilings not involved
- Bond can be used by "authority" without taxing power

Disadvantages

- Limited to one project
- \$1 million minimum
- Detailed analysis necessary
- Higher interest
- Long term stable revenue-making project required
- State authorization necessary in some cases

PRIVATE FINANCING

Industrial Revenue Bonds and Pollution Control Revenue Bonds

These mechanisms involve a financial arrangement between a locality and a private firm. The locality, often, the technical owner of the project, floats the bonds through a special purpose authority. The municipality then "leases" the project to the firm. The lessee payments are in the amount of the bond payments made to the bondholder. If the payments are structured as an "installment sale," the firm can claim tax ownership of the facility. The firm is then eligible for "accelerated depreciation" or a 7 percent investment tax credit. These federal tax shields should serve to reduce the service fees charged to the locality.

Parties involved: locality, investment banker, private firm

Advantages

- Voter approval not required
- Low, tax-exempt interest
- Municipal debt ceilings not involved
- Private sector involvement facilitated

Disadvantages

- Locality guarantee often required on amount of solid waste
- IRS ruling required on tax claim
- State and special legislation required to issue the bonds
- Special legislation required to enter into long term private contract
- Long term stable project required

Leasing

This has traditionally been a short term mechanism (equipment leasing) which is now being used on a long term basis for land and capital intensive projects. It consists of a private firm independently financing a project and then renting it to a locality. Since the locality is not involved in the financing, drain on local funds is reduced. Usually, there is a higher user charge than in other arrangements because interest on the funds that purchased the facility is not tax-exempt.

Parties involved: locality, private firm

Advantages

- No voter approval required
- No local capital required
- May be implemented quickly

Disadvantages

- Higher, non-tax-exempt, lease rates
- State authorization necessary in some cases to enter private or long term contract
- Locality has limited authority over facility. Ownership of the facility may be transferred at the end of the lease

Leveraged Leasing

This is a complicated, newly developed arrangement that has not yet been used for financing solid waste facilities. It involves the locality or the private sector which finances 60-80 percent of the cost of the project through a typical borrowing method. The remaining 20-40 percent is furnished through a leasing arrangement with a high tax bracket financial intermediary who "buys" the tax advantages of owning the entire facility by providing its share of the funds at a very low interest rate. The intermediary is considered to have "purchased" the facility with its investment and future lease payments. In this way leveraged leasing differs from traditional leasing because both the locality (or private sector) and the intermediary put up capital. Funds invested by the intermediary allow him to claim ownership for tax purposes and acquire tax advantages. At the end of the lease, the locality may have the option to purchase the facility.

Parties involved: locality, private firm, financial intermediary

Advantages

- Initial capital requirement reduced
- Can be combined with tax-exempt bonds
- Can lower cost of financing

Disadvantages

- Complex, new method
- Lessor owns his share of facility; city subject to his arrangements

Special Financing Considerations

Financing in smaller communities is usually through GO bonds; they allow for the smaller projects to be grouped under one financing. Small localities seeking other methods often find a high interest charge, because the small size of their bond issues does not attract investor interest or their credit rating is not comparable to larger communities.

Smaller areas interested in resource recovery may want to consider a regional arrangement, not only to increase the financial options available, but also to obtain a higher volume of recoverable materials and approach technological economics of scale.

For further information contact:

Kay Stouffer
Research Associate
Solid Waste Project
National Association of Counties
1735 New York Avenue, N.W.
Washington, DC 20006
(202) 785-9577

Robert E. Randol
Operations Research Analyst
Office of Solid Waste Management Programs
Environmental Protection Agency
1835 K Street, N.W.
Washington, DC 20006
(202) 254-7830

Organizations
Counterpart Affiliations

National Conference of State Legislatures

Office of Science and Technology
1405 Curtis Street, Suite 2300
Denver, Colorado 80202
(303) 623-6600

Joanna Mack, Research Associate

This office of NCSL publishes a monthly report containing current information on Federal and state activities in various science- and technology-related fields. Included are summaries of state legislation, new staff capabilities, special programs, reports, publications, and results of conferences and meetings. In addition, this office periodically publishes its own reports on topics of current interest to state legislators, and serves as a distribution center for reports made available to them by legislative staff people and others assisting state legislators. They also publish an "information exchange newsletter" called "The S&T Connection" which is intended to facilitate exchange of information among legislative staff people concerned with science and technology issues.

A recent issue of the Office of Science and Technology's monthly report included a report on a presentation made by an EPA staff member, Mr. Chris Lehman, on transportation of hazardous material. This presentation was made before a meeting of the NCSL Intergovernmental Relations Committee, Natural Resources Task Force. The summary of this presentation included in the Office of Science and Technology's Monthly Report, April 1976, follows. As is apparent in the summary, this address preceded passage of the Resource Conservation and Recovery Act of 1976.

The following is a summary of Mr. Chris Lehman's presentation before the National Conference of State Legislators Intergovernmental Relations Committee, Natural Resources Task Force, as published in the NCSL Office of Science and Technology's April 1976 newsletter, pages 14 and 15.

EPA is authorized by the 1965 Solid Waste Act to serve in an advisory capacity only to make recommendations, formulate guidelines and model laws.

EPA is currently working on PCB disposal guidelines and general pesticides disposal guidelines. EPA has done 13 industrial hazardous waste studies grouped by state and region for each industry. EPA is supposed to issue a model state hazardous waste law in 2-3 months, and is preparing a directory of all U.S. hazardous waste disposal sites.

Pending Federal Legislation

S2150 (Solid Waste Utilization Act)

- EPA would be required to define and specify harmful quantity for hazardous wastes.
- Grants would be provided for state programs pending their development within three years.
- Grants would also be provided for state/local implementation.
- EPA would develop permit program within 24 months of enactment.

Questions asked

What financial incentives can be used for encouraging proper disposal?

- Tax incentives, exchange programs and recycling are supported by EPA.
- In Europe high disposal charges make exchange and recovery of wastes preferable.
- Example -- Oregon companies are licensed for disposal of hazardous waste, but the only profitable type of disposal is that of radioactive wastes. Companies dispose of chemical wastes as a favor.

Organizations
Counterpart Affiliations

What will EPA model legislation be?

- EPA feels authority should rest as state level
- Wants to require reporting of hazardous waste generation
- Wants to require reporting of hazardous waste transportation, especially interstate
- Wants to require control of storage and disposal
- Will probably recommend state hazardous waste advisory commission (successful in California)
- Presently California and EPA developing EDP system to keep track of hazardous wastes

What are some states doing in hazardous waste?

- In California user disposal surcharge fees pay for the program (fee by ton)
- In Delaware a state solid waste authority has been formed, and state recycling plan is in the works (DE has 1968 landfill resolution)

Resource Recovery and Hazardous Waste

The following publications cover the environmental field from a national perspective, and could serve as good starting points for getting an overview of current environmental concerns. Individuals on their staffs who cover the areas of resource recovery and hazardous waste management are listed below. In addition to serving as potential information sources, these individuals can also serve as contact points for national dissemination of information about new state or local legislation or programs.

National Journal
1730 M Street, N.W.
Washington, D.C.

Dick Kirschten
(202) 857-1400

Congressional Quarterly
1414 22nd Street, N.W.
Washington, D.C.

Bob Rankin
(202) 296-6800

Environmental Reporter
1231 25th Street, N.W.
Washington, D.C.
Managing Editor: Bud Ward
(202) 452-4367

Mr. Ward will direct inquiries to the appropriate staff person.

In addition to these general publications in the environmental field, which carry articles and special reports on resource recovery and hazardous waste management, there are a number of periodicals which regularly run articles regarding these two areas of concern, the staffs of which may be able to help direct an inquirer to specialized individuals or organizations in the field. Some of these periodicals are listed below.

Resource Recovery -- Energy

Professional Engineer

Environmental Science and Technology

Compost Science (Has run articles on methane gas recovery.)

Energy Source

Engineering News Record

Public Power

Combustion

Solid Waste Management

Waste Age

Power

Engineering Journal

Plant Engineering (Has run articles on using waste as industrial
fuel.)

Chemical Engineering

Hazardous Waste Management and Hazardous Waste Disposal

Development Forum

Ground Water

Solid Wastes Management

Environmental Science and Technology

Waste Age

Sierra Club Bulletin

American Laboratory

Chemical Engineering Progress

Chemical Engineering News

Commerce Today

Pollution Engineering

Journal of Environmental Engineering

Chemical Week

Organizations
Trade or Industry
Associations

Resource Recovery and Hazardous Waste

There are a few organizations with a specific trade or industry orientation which are generally concerned with the environment but not solely with any one aspect of the environment. Two such organizations whose concerns include solid waste are:

Chamber of Commerce of the United States
Natural Resources, Environment and Energy Section
1615 H Street, N.W.
Washington, D.C. 20062
(202) 659-6174

David Lukin, Director

The Chamber is a federation of individuals and organizations involved in the business world, including trade and professional associations and local, state and regional chambers of commerce. Information is available on air, water and noise pollution, solid waste disposal and toxic substances. The Chamber disseminates information on new or pending Federal legislation and how new regulations affect individual members, and responds to inquiries.

National Environmental Development Association
550 National Press Building
529 14th Street, N.W.
Washington, D.C. 20045
(202) 638-1230

Thomas A. Young, President

Membership of this organization is comprised of corporations, labor unions, individuals and organizations. The Association provides information on balancing economic and environmental needs.

Resource Recovery -- Energy

The following organizations are information resources with an orientation toward the resource recovery and/or energy industries:

Edison Electric Institute
1140 Connecticut Avenue, N.W.
Washington, D.C. 20036
(202) 223-8597

Sue Lerner, Environmental Economist, Washington Office
(Headquartered in New York)

Electric power companies and electric utility holding companies make up the membership of this organization. Activities include studying the economics of environmental controls in the electric industry, providing industry statistics, and publishing an index of environmental information materials.

Electric Power Research Institute
1750 New York Avenue, N.W.
Washington, D.C. 20006
(202) 872-9222

Robert L. Loftness, Director, Washington Office
(Headquartered in Palo Alto, California)

Private and public electric utilities support this nonprofit research organization. Research is conducted on all aspects of energy of interest to electric utilities.

National Association of Electric Companies
1140 Connecticut Avenue, N.W.
Washington, D.C. 20036
(202) 223-3460

David Toll, Director

Investor-owned electric utilities form the membership of this organization, which conducts research on rates, corporate development, and general research and development in the field.

Organizations
Trade or Industry
Associations

American Public Power Association
2600 Virginia Avenue, N.W.
Washington, D.C. 20037
(202) 333-9400

Alex Radin, General Manager

Local, publicly-owned electric utilities form this organization's membership. The Association provides technical assistance to members, including information on rates, corporate regulation, and research and development.

National Center for Resource Recovery Inc.
1211 Connecticut Avenue, N.W.
Washington, D.C. 20036
(202) 223-6154

Rocco Petrone, President

This is a research organization founded by firms concerned with the packaging industry. Funded by contributions and government contracts, it assists industry and municipalities with solid waste problems.

Hazardous Waste

National Agricultural Chemicals Association
1155 15th Street, N.W.
Washington, D.C. 20005
(202) 296-1585

Parke C. Brinkley, President

This is an organization of pesticide manufacturers which publish information on pesticide safety, development, and use.

Organizations
Professional Associations
and Learned Societies

Resource Recovery

Renewable Natural Resources Foundation
5400 Grosvenor Lane
Bethesda, Maryland 20014
(301) 897-8720

This is a nonprofit, charitable foundation of professional scientific-educational societies engaged in research, education and information dissemination to assist in policy formulation relating to renewable resources. Member societies include the American Fisheries Society, the Society of American Foresters, the National Wildlife Federation, the American Water Resources Association, and a number of other environment-related societies and institutions.

Organizations
Professional Associations
and Learned Societies

Hazardous Waste

American Public Health Association
1015 18th Street, N.W.
Washington, D.C. 20036
(202) 467-5000

William H. McBeath, Executive Director

This is an organization of community and public health professionals, including physicians, dentists, nurses, industrial hygienists, educators, engineers, environmentalists, social workers and pharmacists. Among the concerns of the Association are establishment of standards for scientific procedures in the public health field, and providing information on health effects of certain environmental contaminants on specific populations -- for example, the effects of vinyl chloride and arsenic on industrial populations.

Universities

Auburn University
Auburn, Alabama 36830
(205) 826-4000

Cooperative Fishery Unit
Dr. John S. Ramsey, Leader

Fisheries and Allied Aquacultures
Dr. E. W. Shell, Head

These individuals would be good contacts for information on the state-of-knowledge regarding the effect of hazardous wastes discharged into waters with significant fish populations. In addition, since this department offers advanced degrees to the Ph.D. level, it is possible current graduate researchers would be quite up-to-date on material in this field. The same would be true for the following two departments, forestry and wildlife.

Forestry
Professor Wilbur B. DeVall, Head

Cooperative Wildlife Research Unit
Dr. Daniel W. Speake, Leader

Wildlife
Dr. K. L. Hays, Head

Water Resources Research Institute
Auburn University
Auburn, Alabama 36830

This institute within the university does research on water resources and quality issues, particularly with respect to the State of Alabama itself. The institute publishes the Water Resources Research Institute Bulletin (WRRI), with current information and references on topics in this field. This Institute should serve as a useful source for information on measurement of and problems associated with hazardous wastes in water supplies.

Universities

University of Alabama
P. O. Box 6171
University, Alabama 35486
(205) 348-4520

Natural Resources Center

This Center conducts research and publishes results
concerning a wide-range of Alabama's natural resources.

Resource Recovery and Hazardous Waste

Resources for the Future

1755 Massachusetts Avenue, N.W.
Washington, D.C. 20036
(202) 462-4400

Walter Spofford, Director of Quality and the Environment Section

This is a nonprofit research organization funded by foundations. Areas of research include conservation and development of natural resources, air and water pollution, solid waste disposal, pesticides, and toxic substances. Emphasis is on economic analysis.

League of Women Voters of the United States, Education Fund

1730 M Street, N.W.
Washington, D.C. 20036
(202) 296-1770

Lois Sharpe, Department Coordinator
Environmental Quality Section

This is the nonprofit educational section of the League. Information is collected and disseminated on a number of environmental issues, including air and water pollution, solid waste disposal and recovery, and toxic substances. (Some materials from the League regarding resource recovery are included in the materials section.)

Environmental Action Foundation

1346 Connecticut Avenue, N.W.
Washington, D.C. 20036
(202) 659-9682

Richard Munson, Director

This nonprofit organization is funded by private foundations and government contracts. Areas of concern include environmental and economic impact of public utilities, solid waste and resource recovery, visual environmental impacts, and toxic substances.

Organizations
Public Interest Groups

Resource Recovery and Hazardous Waste, continued

Friends of the Earth

529 Commercial Street
San Francisco, California 94111
(415) 391-4270

620 C Street, S.E.
Washington, D.C. 20003
(202) 543-4312

Jeffrey Knight, Legislative Director

This group promotes preservation of natural resources and provides information on pesticides and other toxic substances, and solid waste disposal, as well as a number of other subject areas.

Sierra Club

530 Bush Street
San Francisco, California 94108
(215) 981-8634

324 C Street, S.E.
Washington, D.C. 20003
(202) 547-1144

Brock Evans, Director

This citizens' interest group has chapters coast-to-coast, and is dedicated to protection and conservation of the world's natural resources. Information is available on a wide-range of environmental topics. The Washington office follows national and regional legislation.

Hazardous Waste

Rachel Carson Trust for the Living Environment Inc.
8940 Jones Mill Road
Chevy Chase, Maryland 20015
(301) 652-1877

Shirley A. Briggs, Executive Director

This nonprofit educational organization is funded by contributions, and provides information about uses of pesticides and the effects of chemical contaminants on public health.

National Resources Defense Council
917 15th Street, N.W.
Washington, D.C. 20005
(202) 737-5000

Marjorie Walbridge, Office Manager

This nonprofit environmental organization is staffed by lawyers and scientists who do research and initiate litigation on toxic substances and air, water, and ozone pollution.

Resource Recovery -- Energy and Hazardous Waste

Model Interstate Scientific and Technical Information
Clearinghouse, (MISTIC)
National Conference of State Legislatures
Office of Science and Technology
1405 Curtis Street
23rd Floor
Denver, Colorado 80202

Joanna Mack, MISTIC Coordinator

MISTIC is an information and referral service performed for state legislators by NCSL. Five Federal agencies have a MISTIC contact person who acts as a referral and reference source for legislators needing information in that particular field. The five agencies are National Science Foundation, Energy Research and Development Administration, National Bureau of Standards, Department of Transportation, and National Aeronautics and Space Administration. Information is also available for other states, through the cooperation of legislative staff people involved in those respective areas, as well as from other agencies and organizations through informal cooperation.

Resource Recovery

As an example of the type of assistance in the area of resource recovery available from MISTIC, the following description of MISTIC's response to one such inquiry is taken from NCSL's report, "Linking State Legislatures and the Scientific and Technical Community: An Evaluation of MISTIC's First Year," February 1976:

A Vermont legislator requested information on parameters and costs of resource recovery programs for a state with a scattered rural population. The question was referred to one of MISTIC's contacts, Mr. Jim Breithaupt, Special Assistant on Solid Waste for the Council of State Governments. In his response, Mr. Breithaupt outlined the factors to consider and asked the National Center for Resource Recovery to contact the legislator with more information. Initial indications were that Vermont might have too small a population to support a state resource recovery program, but that one possibility would be to join with another state in formulating and operating such a program.

Hazardous Waste

As an example of the type of assistance MISTIC has rendered in the area of hazardous waste, the following example is taken from the NCSL report cited above:

The State of Kentucky Hazardous Waste Agency inquired as to the Federal definitions of hazardous waste, existing state regulations concerning hazardous waste, and what methods of control were available. MISTIC obtained the EPA, DOT and NBS definitions of hazardous waste, various state definitions and a list of specific substances identified by the State of Illinois as hazardous. Research at that time indicated that state approaches to hazardous waste management and disposal varied widely. Minnesota and Illinois had relatively comprehensive programs, while other states handled the problem on more of an ad hoc basis. Some states licensed haulers and disposal site operators. EPA's Office of Solid Waste Management was identified as the Federal agency most involved with this area of concern.

Since MISTIC handled this request, Federal legislation concerning hazardous waste has been passed. In order to comply with this new legislation, states will need better information concerning hazardous substances, wastes, management and disposal. MISTIC will undoubtedly be handling an increasing number of requests for this type of information.

In addition, the NCSL Office of Science and Technology is presently in the process of preparing a decisionmakers brief on the transportation of hazardous materials. This brief will provide information on state legislation, policy issues, Federal activities, and other related information.

Referral Services

Resource Recovery--Energy and Hazardous Waste

National Referral Center
Science and Technology Division
Library of Congress
10 First Street, S.E.
Washington, D.C. 20540
(202) 426-5670

The National Referral Center serves as a referral source for anyone who needs to know whom to contact to get a particular type of information. In response to written or telephoned requests, the Center will prepare a listing of agencies, organizations, and individuals specializing in the type of information requested. There is no charge for this service. Since the Center is concerned primarily with people and organizations, it does not refer inquiries to books, journals, or other bibliographic sources. However, if appropriate to a request, the Center will furnish titles of abstract journals, indexes, and directories. In addition, the Center will refer bibliographic information requests to other divisions of the Library of Congress which will in turn respond with bibliographic information.

In addition to custom referral information, the Referral Center prepares referral compilations on various topics of current interest. Copies of these listings are readily available from the Center, as is a current list of topics on which compilations have been prepared. Two examples of referral compilations relating to the two areas being searched for the present study -- resource recovery and hazardous waste -- are included following this page: (1) "Selected Information Resources on Solid Wastes," and (2) "Selected Information Resources on Hazardous Materials."

SL 72-6
Revised March 1975

NATIONAL REFERRAL CENTER
SCIENCE AND TECHNOLOGY DIVISION
LIBRARY OF CONGRESS
Washington, D.C. 20540

SELECTED INFORMATION RESOURCES ON SOLID WASTES

Technical Information Staff (AW562) (N11963)
Office of Solid Waste Management Programs
U.S. Environmental Protection Agency
1835 K Street, N.W., Room 808
Washington, D.C. 20460

Telephone: (202) 254-7496

The Office's Technical Information Staff answers inquiries in all aspects of solid waste management, including the recycling and reclamation of solid wastes and citizen education. It has published Solid Waste Management: Available Information Materials (1973), as well as directories, technology transfer reports, audiovisual materials, and publications for the concerned citizen. Publications may be ordered from the Solid Waste Information Control Section, U.S. Environmental Protection Agency, 5555 Ridge Road, Cincinnati, Ohio 45268 (Telephone: 513/684-8491).

Solid Waste Information Retrieval System (R1)
Office of Solid Waste Management Programs
U.S. Environmental Protection Agency
P.O. Box 2365
Rockville, Maryland 20852

Telephone: (202) 254-7438

SWIRS is an automated information retrieval system containing over 31,000 abstracts from the world's periodical, nonperiodical, and patent literature in the field of solid waste management. Literature-searching services are available, and are described in the Users' Guide to the Solid Waste Information Retrieval System Thesaurus (1973) and in Information Retrieval Services of EPA's Office of Solid Waste Management Programs (1972).

Solid and Hazardous Waste Research Laboratory
U.S. Environmental Protection Agency
5555 Ridge Road
Cincinnati, Ohio 45268

(N8574)

Telephone: (513) 684-4477

Among the interests of the Laboratory are research leading to a basis for solid waste management regulatory programs, research leading to improved municipal waste management practices, development and evaluation of resource recovery technologies to provide options for energy and materials recovery, hazardous waste fixation and chemical detoxification studies, and other solid waste research, including gas leachate, soil migration, pesticide treatment and control, and fixation encapsulation studies. Inquiries will be answered, and other services provided, as time permits.

Salt Lake City Metallurgy Research Center
Bureau of Mines
U.S. Department of the Interior
1600 East First South Street
Salt Lake City, Utah 84112

(N2309)

Telephone: (801) 524-5350

The Center conducts research on special metals and maintains a research program on the recovery of useful products from solid industrial wastes and scrap automobiles. Information will be provided as time permits.

Energy Research Center
U.S. Energy Research and Development Administration
4800 Forbes Avenue
Pittsburgh, Pennsylvania 15213

(N10113)

Telephone: (412) 892-2400

Research on the conversion of municipal and industrial refuse into useful materials by pyrolysis has been conducted by the Center. Information and document services will be provided on request.

Environmental Planning and Assessment Staff
Division of Environmental Planning
U.S. Tennessee Valley Authority
401 Building, Room 272
Chattanooga, Tennessee 37401

(N7665)

Telephone: (615) 755-3147

The Staff conducts research on solid wastes disposal, dust, fly-ash and bottom ash from coal fired steam plants, pyrolysis of hazardous and toxic materials, revegetation of filled-ash ponds, and leachate studies in sanitary landfills. Information will be provided on request.

U.S. Council on Environmental Quality
722 Jackson Place, N.W.
Washington, D.C. 20006

(N10916)

Telephone: (202) 382-1235

The mission of the Council is to coordinate and explain federal environmental policy to the public. It publishes the 102 Monitor (monthly) and an annual report, Environmental Quality. Resource Recovery: The State of Technology was prepared for the Council by the Midwest Research Institute (1973).

National Solid Wastes Management Association
1730 Rhode Island Avenue, N.W., Suite 800
Washington, D.C. 20036

(N12636)

Telephone: (202) 659-4613

The Association is a professional and industry organization interested in the collection and disposal of all types of waste materials, the processing and reclamation of secondary materials, the specialized handling of commercial/industrial wastes, and the manufacture of mobile collection, stationary compaction, and processing landfill equipment. Monthly Technical Bulletins are published. The Association answers inquiries, provides consulting services, makes referrals to other sources of information, conducts seminars and national surveys, and maintains a speakers bureau.

National Center for Resource Recovery
1211 Connecticut Avenue, N.W., Suite 800
Washington, D.C. 20036

(N11378)

Telephone: (202) 223-6154

The Center is a technical research organization interested in extracting resources from municipal wastes. It publishes a quarterly Bulletin, answers inquiries, and suggests other organizations for additional information.

National Association of Recycling Industries, Inc.
330 Madison Avenue
New York, New York 10017

(N9805)

Telephone: (212) 867-7330

The Association sponsors research and provides information and consulting services on the reuse of solid waste (scrap metal) materials. Questions which cannot be answered will be referred to co-operating members for reply. A pamphlet, Guidelines for Effective Recycling, is available.

Solid Waste Recycling Information Service
National Association of Recycling Industries, Inc.
330 Madison Avenue
New York, New York 10017

(R2)

Telephone: (212) 867-7330

The Service provides guidance to state, municipal, and county officials involved in solid waste management and environmental problems.

Incinerator Institute of America
2425 Wilson Boulevard
Arlington, Virginia 22201

(N3172)

Telephone: (703) 520-0663

The Institute provides information and consulting services on incinerators and solid waste disposal. Reference services are available, and publications are sold.

Mr. S. A. Bortz
Mechanics and Materials Division
IIT Research Institute
10 West 35th Street
Chicago, Illinois 60616

(R3)

Telephone: (312) 225-9630, Ext. 4747

Research on high temperature incineration is being conducted by the Division.

Center for Urban Environmental Studies
Polytechnic Institute of New York
333 Jay Street
Brooklyn, New York 11201

(N10537)

Telephone: (212) 643-2124

The Center is interested in such aspects of solid wastes as incineration and other disposal methods. It is developing a computer system for street litter (street sweeping) analyses.

National Environmental Health Association
1600 Pennsylvania Street
Denver, Colorado 80203

(N1812)

Telephone: (303) 832-1550

Information is disseminated primarily through the Association's publications, including the Journal of Environmental Health (bimonthly). Minimal fees may be charged for publications and materials.

Keep America Beautiful, Inc.
99 Park Avenue
New York, New York 10016

(N4386)

Telephone: (212) 682-4564

Keep America Beautiful is a nonpartisan, public service organization working with citizen groups, government agencies, academic institutions, and private industry to stimulate involvement in improving the environment. Research on litter control and littering behavior is conducted.

Department of Environmental Systems Engineering
Clemson University
Rhodes Center
Clemson, South Carolina 29631

(N9193)

Telephone: (803) 656-3276

The Department performs research on the disposal of wastes, primarily solid wastes. It publishes training manuals for treatment plant operators. Information and consulting services are provided as time permits.

Solid Waste Processing Division
American Society of Mechanical Engineers
United Engineering Center
345 East 42nd Street
New York, New York 10017

(R4)

Telephone: (212) 752-6800

The Division is interested in systems for disposing and the processing of solid wastes, including industrial and liquid industrial wastes. Requests for information on these topics will be answered or referred to member specialists for reply. Conferences are held regularly, and the proceedings are published.

Midwest Research Institute
425 Volker Boulevard
Kansas City, Missouri 64110

(N8493)

Telephone: (816) 561-0202

Among the activities of the Midwest Research Institute are research projects in such areas of solid wastes as the use of refuse for energy, technology assessment of solid wastes, solid waste management, and solid wastes in water. Research results are disseminated by the contract sponsor, but brief inquiries will be answered.

Environment Information Center
124 East 39th Street
New York, New York 10016

(N10915)

Telephone: (212) 685-4826

EIC publishes Environment Information Access, a current-awareness service covering more than 400 scholarly, scientific, technical, and general periodicals and major newspapers. Services are available only to subscribers, and include answers to inquiries and reference, literature-searching, and duplication services.

Aluminum Recycling Association
1775 K Street, N.W., Suite 215
Washington, D.C. 20006

(N2758)

Telephone: (202) 785-0550

The Association's membership is composed of secondary metals dealers who sell scrap aluminum. Its services are primarily for sponsors, and are provided to others as time and regulations permit.

Rubber Reclaimers Association
c/o Mr. T. H. Fitzgerald, Secretary-Treasurer
63 Radnor Avenue
Naugatuck, Connecticut 06770

(PN10091)

Telephone: (203) 729-2460

The membership of the Association is composed of convertors of scrap rubber and tires into reclaimed rubber by mechanical and chemical processes. Commercial standards on scrap rubber and technical bulletins on reclaimed rubber use are published. The Association maintains a solid waste committee to which inquiries will be referred.

Disposal Group
Society of the Plastics Industry, Inc.
250 Park Avenue
New York, New York 10017

(N225)

Telephone: (212) 687-2675

Information on the disposal of plastic materials is provided by the Group, which also suggests cooperating members for more extensive consultation.

Technical Association of the Pulp and Paper
Industry
1 Dunwoody Plaza
Atlanta, Georgia 30341

(N248)

Telephone: (404) 394-6130

The Association answers technical inquiries or refers them to qualified members for reply. It publishes TAPPI (monthly). A special committee on secondary fiber pulping provides information on the deinking and reuse and disposal of waste paper.

Concerned Waste Paper Dealers of Chicago
333 North Michigan Avenue
Chicago, Illinois 60601

(N10634)

Telephone: (312) 332-3006

Consulting services are provided on a contract basis, but information is available to the public without charge. The organization has published Ecological Management Through Recycling.

Concern, Inc.
2233 Wisconsin Avenue, N.W.
Washington, D.C. 20007

(N11544)

Telephone: (202) 965-0066

Concern is a nonprofit, tax exempt organization dedicated to environmental education and consumer action. In addition to A Recycling Center Plan, it has published a series of pocket-size consumer guides, Eco-Tips, of which the third dealt with solid wastes. Requests for publications should be accompanied by a large self-addressed, stamped envelope.

Illinois Institute for Environmental Quality
309 West Washington Street
Chicago, Illinois 60606

(N13910)

Telephone: (312) 793-3870

The mission of the Institute is to provide state and municipal governments with the expertise necessary to deal with environmental and conservation problems. Its Solid Waste Program assists state regulatory agencies in drafting proposed regulations, preparing management strategies, providing technical assistance, and acquiring expert input for all solid waste regulatory proposals. A quarterly newsletter is published, and an on-line legislative bill tracing system is maintained for the state legislature.

Institute of Scrap Iron and Steel
1729 H Street, N.W.
Washington, D.C. 20006

(N771)

Telephone: (202) 298-7660

The Institute provides information on the generation, consumption, uses, marketing, and processing of scrap iron and steel. It publishes a yearbook, standards, specifications, directory, and proceedings of conferences. It suggests cooperating members for consultation on extensive problems.

NRC SWITCHBOARD

National Referral Center, Science and Technology Division
Library of Congress, 10 First Street SE., Washington, D.C. 20540
Telephone: (202) 426-5670

SELECTED INFORMATION RESOURCES ON HAZARDOUS MATERIALS

SL 72-3

Revised April 1976

Transportation, handling, and storage

Office of Hazardous Materials (N7915)
Office of the Assistant Secretary for Environment,
Safety, and Consumer Affairs
U.S. Department of Transportation
2100 Second St. SW.
Washington, D.C. 20590

Telephone: (202) 426-0656

The Office consults with and advises shippers, carriers, government agencies, and the general public on all phases of shipping and transportation of hazardous materials, and informs participants on the formulation, promulgation, and administration of the hazardous materials regulations. Publications include notices of proposed rule-making and amendments and the Code of Federal Regulations, Title 49-Transportation (parts 100-199).

National Transportation Safety Board (N9686)
800 Independence Ave. SW.
Washington, D.C. 20594

Telephone: (202) 426-8169

The Board performs and sponsors special safety studies and accident reports pertaining to aviation, highway, pipeline, railway, and marine transportation accidents and related subjects. It prepares statistical compilations of selective data and permits onsite use of its collections. Fees are charged for some services.

Transportation Safety Institute
U.S. Department of Transportation
P.O. Box 25082
Oklahoma City, Okla. 73125

(N12466)

Telephone: (405) 686-2153

The Institute performs research on accident prevention in all modes of transportation; cargo security; risk management; hazardous materials transportation; and related areas. It answers inquiries and provides copies of publications generated by the staff.

CHEMTREC--Chemical Transportation Emergency Center
Manufacturing Chemists Association
1825 Connecticut Ave. NW.
Washington, D.C. 20009

(R1)

Telephone: (800) 424-9300 (day or night, toll free)
(202) 483-7616 (Alaska, Hawaii, and local calls)

This service provides assistance in any transportation emergency involving chemicals. It is not a general source of information on chemical properties, toxicology, sources of supply, etc. CHEMTREC first provides instructions to the scene of the emergency, then contacts the shipper of the chemicals or other appropriate offices and passes responsibility for the shipment on to them.

United Parcel Service
643 West 43d St.
New York, N.Y. 10036

(R2)

UPS has published a Guide for Handling Hazardous Materials, including specifications for shipping containers. The material is in loose-leaf form for continuous updating, and information on its availability will be provided.

Railway Systems and Management Association (RSMA)
181 East Lake Shore Drive
Chicago, Ill. 60611

(N13914)

Telephone: (312) 943-5542

The handling and transportation of hazardous materials is a major concern of RSMA, which publishes Chemical Transportation Safety Index and Handling Guide for Potentially Hazardous Commodities. It also publishes Railway Management Review (quarterly). RSMA answers

inquiries, provides reference services, conducts seminars on a fee basis, sells publications, and makes referrals to other sources of information.

Mail Classification Division
U.S. Postal Service
475 L'Enfant Plaza, Room 1610
Washington, D.C. 20260

(R3)

Telephone: (202) 245-4540

The Division establishes standards for what can be sent through the mails and how it should be packaged. Information is furnished on request.

Cargo and Hazardous Materials Division
Office of Merchant Marine Safety (GMHM-83)
U.S. Coast Guard
400 Seventh St. SW.
Washington, D.C. 20590

(N6407)

Telephone: (202) 426-2297

The Division publishes Chemical Data Guide for Bulk Shipment by Water (CG 388), regulations, circulars, and technical notes. It answers inquiries and makes referrals to other sources of information.

Maritime Research Information Service (MRIS)
Division of Engineering
National Academy of Sciences--National Research Council
2101 Constitution Ave. NW.
Washington, D.C. 20418

(N10849)

Telephone: (202) 389-6687

MRIS collects and abstracts publications related to all aspects of ships and shipping (e.g., navigation, maritime affairs, trade) and publishes the MRIS Bulletin from computer tape records. It provides literature searching services on a fee basis.

American Institute of Merchant Shipping
1625 K St. NW., Suite 1000
Washington, D.C. 20006

(N856)

Telephone: (202) 783-6440

The Institute answers inquiries on all phases of the shipping

industry--worldwide, but with primary focus on shipping under the U.S. flag; international activities; legislation; technical developments; safety aspects; oil pollution; tankers; and the safe transport of hazardous cargo. Services are provided primarily to member companies and approved individuals.

Chemical Committee on Transportation by Water
American Petroleum Institute
2101 L St. NW.
Washington, D.C. 20037

(N143)

Telephone: (202) 457-7099

Concerned with the safe transportation of oil and petroleum products by tankers, and with oil spills, wastes, and related areas, the Committee answers inquiries or suggests other sources, including cooperating members, for consultation.

Air Cargo, Inc.
1730 Rhode Island Ave. NW.
Washington, D.C. 20036

(R4)

Telephone: (202) 293-2222

This organization provides information and documents on all aspects of air cargo transport, including the safe handling and shipping of hazardous materials.

Aerospace Safety Research and Data Institute
National Aeronautics and Space Administration
Lewis Research Center
21000 Brookpark Rd.
Cleveland, Ohio 44135

(N11217)

Telephone: (216) 433-4000, Ext. 285 or 453

The Institute maintains a computerized safety data bank. Inquiries are answered; consulting, reference, literature-searching, and duplication services are provided; onsite use of the collection is permitted; and referrals are made to other sources of information. Services are available to NASA, to Government agencies and their contractors, and to the aerospace community.

Air Transport Association of America
1709 New York Ave. NW.
Washington, D.C. 20006

(N278)

Telephone: (202) 872-4000

The Association provides information on historical, economic, legal, and statistical aspects of air transportation. Its Library contains the annual reports and house organs of the U.S. scheduled airlines as well as other materials pertinent to transport. The Association publishes Air Transport Facts and Figures (annual).

The Material Handling Institute, Inc. (MHI)
1326 Freeport Rd.
Pittsburgh, Pa. 15238

(N1260)

Telephone: (412) 782-1624

Concerned with every type of industrial material handling equipment and its use, the Institute answers inquiries, rents films, and publishes MHI News (3 issues a year); College Industry Committee on Material Handling Education News (3 issues a year); pamphlets; standards and specifications; and filmstrips.

National Agricultural Chemicals Association
1155 15th St. NW.
Washington, D.C. 20005

(N9172)

Telephone: (202) 296-1585

The Association answers inquiries and provides consulting services in the fields of agricultural chemistry, pesticides, and toxicology. It suggests cooperating members for extensive services, and operates a Pesticide Safety Team Network to dispatch personnel and equipment to the scene of a pesticide accident.

Chemicals, toxicology, and pesticides

Toxicology Information Response Center (TIRC) (N11272)
Information Center Complex
Information Division
Oak Ridge National Laboratory
P.O. Box X
Oak Ridge, Tenn. 37830

Telephone: (615) 483-8611, Ext. 31433

TIRC is sponsored by the Toxicology Information Program of the National Library of Medicine to establish a national and international center of toxicological information. It publishes bibliographies, abstracts, and indexes; answers inquiries; provides current-awareness, reference, literature-searching, and abstracting and indexing services; permits onsite use of its collections; and makes referrals to other sources of information. Fees are charged for services involving searches of the literature and the MEDLINE, TOXLINE, and ORNL computerized data bases.

Toxic Materials Information Center (N11499)
Environmental Information Systems Office
Oak Ridge National Laboratory
P.O. Box X
Oak Ridge, Tenn. 37830

Telephone: (615) 483-8611, Ext. 31639

The Center's mission is to establish a data base on environmental levels of toxic materials. Toxic metals are emphasized, but synthetic and natural organic compounds are also covered. Inquiries are answered and state-of-the-art reviews are prepared.

Toxicology Information Program (N11366)
National Library of Medicine
National Institutes of Health
U.S. Department of Health, Education, and Welfare
8600 Rockville Pike
Bethesda, Md. 20014

Telephone: (301) 496-1131

This on-line computer-based storage and retrieval information system contains citations and abstracts from the Toxicity Bibliography, the Pesticide Abstract, Chemical Biological Activities, International Pharmaceutical Abstracts, and Health Effects of Environmental Pollutants. The Program publishes reports, directories, bibliographies,

abstracts, and indexes; answers inquiries; provides reference, literature-searching, abstracting, and indexing services; and makes referrals to other sources of information.

Poison Control Program
Bureau of Drugs
Food and Drug Administration
5401 Westbard Ave.
Bethesda, Md. 20016

(N2417)

Telephone: (301) 496-7691

The Program (formerly the National Clearinghouse for Poison Control Centers) is concerned with poisoning from household products and drugs or medicine. It provides affiliated poison control centers with information regarding antidotes and ingredients of products. The affiliated centers provide the medical profession information concerning prevention and treatment of accidents involving ingestion of poisonous and potentially poisonous substances. The Program publishes Bulletin of the National Clearinghouse for Poison Control Centers (bimonthly) and Directory of Poison Control Centers.

Publication and Technical Literature Section
Technical Services Division
Office of Pesticides Programs
U.S. Environmental Protection Agency
401 M St. SW.
Washington, D.C. 20460

(N6696)

Telephone: (202) 426-2432

The Section answers inquiries and provides reference and literature-searching services on the effects of pesticides on human health. It maintains a collection of index cards to the pesticide literature and publishes Pesticides Abstract and the Pesticides Monitoring Journal. Onsite use of the collection is permitted.

Pesticides Registration Division
Office of Pesticides Programs
U.S. Environmental Protection Agency
401 M St. SW.
Washington, D.C. 20460

(N8634)

Telephone: (202) 426-2601

The Division answers letters of inquiry about the status of pesticide uses under the provisions of the Federal Insecticide,

Fungicide and Rodenticide Act which requires the registration and proper labeling of pesticides prior to interstate shipment and provides for post marketing surveillance of products to determine compliance with the Act. Information is provided on pesticide toxicology, residue tolerances, analytical standards, and chemical methodology.

Industrial Health Foundation, Inc.
5231 Centre Ave.
Pittsburgh, Pa. 15232

(N9249)

Telephone: (412) 687-2100

The Foundation answers inquiries in the fields of industrial hygiene, environmental and occupational health, aerosols, carcinogens, dust, fumes, gases, hazardous chemicals, environmental pollutants, irritants, and related areas. It publishes the Industrial Hygiene Digest (monthly), bulletins in chemical-toxicological series, and other materials. Services are primarily for members, but are extended to others as time permits. Fees are charged for extensive services.

Environmental Mutagen Information Center
Environmental Information System Office
Oak Ridge National Laboratory
P.O. Box Y
Oak Ridge, Tenn. 37830

(N10213)

Telephone: (615) 483-8611, Ext. 35473

The Center collects and systematizes published works on chemical mutagenesis (radiation is excluded). The data is computerized and indexed by organism and agent. Specific inquiries are answered and state-of-the-art reports are prepared.

Chemical Hygiene Fellowship
Carnegie-Mellon Institute of Research
Carnegie-Mellon University
4400 Fifth Ave.
Pittsburgh, Pa. 15213

(N9349)

Telephone: (412) 327-1020

The Fellowship is interested in the area of chemical contaminants. It publishes journal articles; answers brief inquiries free; provides consulting services on a cost basis; and makes interlibrary loans from its holdings of books, periodicals, and reports.

Trace Level Research Institute
Purdue University
West Lafayette, Ind. 47907

(N1561)

Telephone: (317) 494-8537

The Institute conducts research and collects information in the areas of pharmacology, toxicology, and metabolism, with particular emphasis on chemical residues left in living systems by food additives, animal feed additives, pesticides, soil and feed additives, drugs, cosmetics, and hormones. It answers inquiries and provides consulting and research services for a fee.

Chemical Propulsion Information Agency (CPIA)
Applied Physics Laboratory
Johns Hopkins University
Johns Hopkins Rd.
Laurel, Md. 20810

(N86)

Telephone: (301) 953-7100, Ext. 7800

This Department of Defense Information Analysis Center collects information and data on the research, development, testing, and evaluation of chemical rocket systems, including propellant and ingredient characterization, formulation, and performance; combustion; exhaust plume characterization; and safety and environmental protection. Information is made available to sponsors and their contractors and to others by approval on a need-to-know basis.

Gases

Technical Information Services
Institute of Gas Technology
3424 South State St.
Chicago, Ill. 60610

(N395)

Telephone: (312) 567-3847

The Institute, which is interested in all aspects of natural and manufactured gas, publishes Gas Abstracts (monthly), Gas Scope (bi-monthly), research bulletins, and technical reports, and maintains a collection of books, journals, reports, and patents. It answers inquiries; provides reference services; makes referrals; permits onsite use of its collection; makes interlibrary loans; provides literature-searching, patent-searching, bibliographic, and duplication services for a fee; and provides MASTIR (Microfilmed Abstract System for Technical Information Retrieval) information service.

Compressed Gas Association, Inc.
500 Fifth Ave.
New York, N.Y. 10036

(N4396)

Telephone: (212) 524-4796

This Association of over 200 manufacturers and producers submits recommendations to Government agencies to improve safety standards; acts as advisor to regulatory authorities; and conducts national and regional meetings. A publications list is available on request.

National LP-Gas Association
79 West Monroe St.
Chicago, Ill. 60603

(N1171)

Telephone: (312) 372-5484

The Association provides information on liquefied petroleum and butane and propane gas, including appliances, equipment, safe handling and storage, transportation, statistics, advertising and promotion.

The Chlorine Institute
342 Madison Ave.
New York, N.Y. 10017

(N163)

Telephone: (212) 682-4324

The Institute provides information on specialized problems of chlorine, and offers free consulting services to chlorine producers, users, and other interested persons. It operates the Chlorine Emergency Plan, a service designed to provide first aid to shippers of chlorine involved in accidents.

Explosives, radiation

Institute of Makers of Explosives
420 Lexington Ave.
New York, N.Y. 10017

(N1359)

Telephone: (212) 689-3237

Safety in the transportation, handling, storage, and use of commercial explosives, blasting agents, and related blasting supplies are among the interests of the Institute, which publishes pamphlets, education posters, and display material. Inquiries are answered, referrals are made, and pamphlets are distributed.

National Council on Radiation Protection and
Measurements
7910 Woodmont Ave.
Bethesda, Md. 20014

(N6718)

Telephone: (301) 657-2652

Services are primarily for Council members and participants, but are provided to others as time permits.

Explosives Safety Board
U.S. Department of Defense
Forrestal Building, Room 6A154
1000 Independence Ave. SW.
Washington, D.C. 20314

(N8100)

Telephone: (202) 693-5436 or 693-5458

The Board answers inquiries; makes referrals; and provides advisory and consulting services to the Defense Department, other Government agencies, authorized contractors, approved foreign governments, and the public--within applicable security restrictions--on safety problems associated with explosives. It publishes various reports, bibliographies, and proceedings of conferences and seminars.

Atomic Industrial Forum, Inc.
7101 Wisconsin Ave. NW.
Washington, D.C. 20014

(N271)

Telephone: (301) 654-9260

Safety in the nuclear industry is one of the concerns of the Forum. It makes interlibrary loans from its collection of books, bound volumes, ERDA reports, and pamphlets; permits onsite use of the collection by members; and publishes Nuclear Industry (monthly). A price list of publications is available on request.

Office of Radiation Programs (AW-558)
Environmental Protection Agency
401 M St. SW.
Washington, D.C. 20460

(N11273)

Telephone: (202) 755-4894

The Office of Radiation Programs publishes its findings in Radiation Data and Reports (monthly) and in appropriate scientific journals. It answers inquiries; provides information to state health offices,

federal and state agencies, scientific organizations, and industries; and makes referrals to other sources of information.

Scientific and Technical Information Division (N4968)
U.S. Department of the Army-Armament Command
Picatinny Arsenal, ATTN: SARPA-TS-S
Dover, N.J. 07801

Telephone: (201) 328-2914

The Command is interested in explosives and related subjects. The Division publishes reports, bibliographies, and a Technical Information Bulletin. It answers inquiries; makes referrals; provides reference, literature-searching, translation, and duplication services; and makes interlibrary loans. Services are available to the Defense Department, other Government agencies, and to other groups on a selected, limited basis.

Flammability, fire

Flammability Research Center (N11735)
391 South Chipeta Way Research Park
Salt Lake City, Utah 84108

Telephone: (313) 927-1271

The Center performs research and provides information and consulting services on problems related to fire-resistant coatings, smoke, burns, fabrics, toxicity, and flammability. Research and extensive consulting services are provided on a fee or contract basis.

Fire Information Reference Services (490.10) (N12709)
Fire Technology Division
National Bureau of Standards
U.S. Department of Commerce
Washington, D.C. 20234

Telephone: (301) 921-3246

The office provides information and data on fire research and safety, fire in buildings, and fabric flammability. Onsite use of the collection is permitted, and bibliographies, statistical summaries, and technical reports are published.

Federal Fire Council
National Fire Prevention and Control Administration
U.S. Department of Commerce
Washington, D.C. 20230

(N7765)

Telephone: (202) 634-7722

The Council serves as an official advisory agency in matters relating to the protection of Federal employees and property from fire. Pamphlets, recommended practices, bibliographies, research digest reports, and a newsletter are published, and a special collection on fire safety matters, films, and slides is maintained. The Council answers inquiries, provides consulting services, and makes referrals to other sources of information. Services are primarily for Government personnel; others are served as resources permit.

National Fire Protection Association (NFPA)
470 Atlantic Ave.
Boston, Mass. 02210

(N339)

Telephone: (617) 482-8755

The Association is concerned with the development of fire prevention and fire protection standards to reduce loss of life and destruction of property. Publications of the Association include Fire Journal (bimonthly), Firemen (monthly), Fire Technology (quarterly), Fire News (monthly), National Fire Codes (annual, 10 vols.), Fire Protection Handbook (every 5 years), NFPA Inspection Manual, technical reports, proceedings, state-of-the-art reviews, and pamphlets. NFPA answers inquiries; provides limited consulting services to members; makes literature searches; permits onsite use of its collection; makes interlibrary loans; makes fire-record studies for a fee; sells training films, slides, and published materials; and makes referrals to other sources of information.

Safety and Fire Protection Committee
Manufacturing Chemists Association
1825 Connecticut Ave. NW.
Washington, D.C. 20009

(N5487)

Telephone: (202) 483-6126

The Committee collects and publishes case histories of accidents in the chemical industry. Information and document services are primarily for members, but are provided to others as time permits.

Others

National Injury Information Clearinghouse (N11956)
Bureau of Epidemiology
Consumer Product Safety Commission
Westwood Towers Building, Room 323
5401 Westbard Ave.
Bethesda, Md. 20207

Telephone: (301) 496-7687

The Clearinghouse is concerned with injury data on accidents associated with consumer products, and maintains a collection of such data. It publishes NEISS News (monthly newsletter of articles and summaries of injury data collected through the National Electronic Injury Surveillance System); answers inquiries; and provides injury data and access to injury investigation reports. Services are available to persons concerned with the epidemiology of consumer product-associated injuries.

Safety Research Information Service (N8770)
National Safety Council
425 North Michigan Ave.
Chicago, Ill. 60611

Telephone: (312) 527-4800

The Service answers inquiries, provides advisory technical reference and literature-searching services, and makes referrals to other sources of information. The Council maintains a library which provides duplication services for a fee and lends material under certain circumstances. Publications of the Council include Journal of Safety Research (quarterly), National Safety News (monthly), Guide to Traffic Safety Literature (annual), Guide to Occupational Safety Literature (annual), and Accident Facts (annual).

Citizenship-Legislative Department (N10656)
Oil, Chemical, and Atomic Workers International Union
1126 16th St. NW.
Washington, D.C. 20036

Telephone: (202) 223-5770

The Union is interested in occupational health and safety problems of workers and environmental health problems in the United States. The Department answers inquiries; provides consulting and reference services; permits onsite use of its collection of books, periodicals and reports; and makes referrals to other sources of information.

National Association of Corrosion Engineers
2400 West Loop South
Houston, Tex. 77027

(N172)

Telephone: (713) 622-8980

The Association collects information and data on all aspects of engineering involving metallic and nonmetallic surfaces exposed to water and all corrosive environments. It provides literature-searching and duplication services on a fee basis. Publications include Corrosion (monthly), Materials Protection (monthly), and Corrosion Abstracts (bimonthly), as well as reports, proceedings, and bibliographies.

American Society for Testing and Materials
1916 Race St.
Philadelphia, Pa. 19103

(N287)

Telephone: (215) 569-4200

The Society is active in the standardization of specifications and methods of testing materials, including metals, cement, lime, concrete, petroleum products and lubricants, paint, gaseous fuels, industrial chemicals, plastics, rubber, and solvents. The information is available through the Society's publications.

Reference Services

Resource Recovery--Energy and Hazardous Waste

Reference Section

Science and Technology Division
Library of Congress
10 First Street, S.E.
Washington, D.C. 20540
(202) 426-5670

The Reference Section serves as the bibliographic information resource unit of the Science and Technology Division. Books, journal articles, government reports, Congressional hearings, and a wealth of other information sources are indexed by the Library of Congress and can be retrieved through the use of the computerized system ("Scorpio") operated by the Referral Center. Titles, abstracts, and availability of the documents can all be retrieved in response to either a telephoned or written request. There is no charge for the service.

As part of the current information search on resource recovery for energy, and hazardous waste management and disposal, this service was utilized. Copies of the computer print-out which resulted from this bibliographic search are included on the following pages. A brief explanation of the information shown on these computer sheets is helpful in understanding what follows:

Use of this system concentrated solely on the "Citation File." This file consists of periodical articles, Congressional documents, and various other Federal and non-Federal government reports. Three products of this search are included on the following pages: (1) Listings of citations indexed under "Refuse as Fuel"--43 items were indexed under this category; (2) Listings of citations indexed under both "Solid Waste" and "Hazardous Substances"--15 items were retrieved which were indexed under both categories (This combination of index categories was used to retrieve citations relating to the topic of hazardous waste, since the indexing system has no category specifically for that topic.); and (3) Citations and abstracts relevant to resource recovery and/or to hazardous waste, as retrieved using the index category "Solid Waste." Since there were 557 citations under this index category, only the first few and all those published in 1976 or more recently were retrieved and printed.

Reference Section
Science and Technology Division
Library of Congress

"Scorpio" System

Titles indexed under "Refuse as Fuel"

FILE:CITN: TITLE/LINE--SET 8

ITEMS 1-8 OF 43

- LRS75-30294: Heat recovery: a new dimension in solid waste disposal./ ASHRAE American Society of Heating, Refrigerating, and Airconditioning Engineers Journal, v. 16, Oct. 1974: 63-65.
- LRS75-6342: Garbage: the Cinderella fuel./ Reader's digest, v. 106, Feb. 1975: 37-38, 41.
- LRS75-8081: Refuse to energy./ MPI Midwest Research Institute quarterly, springs 1975: 4-9.
- LRS75-8394: An economic analysis of fuel gas production from solid waste./ Resource recovery and conservation, v. 1, May 1975: 95-105.
- LRS75-8395: Energy recovery from municipal solid waste and method of comparing refuse-derived fuels./ Resource recovery and conservation, v. 1, May 1975: 85-93.
- LRS75-8927: Maximizing resource recovery from solid waste./ Buildings systems design, v. 72, Apr.-May 1975: F3-F7.
- LRS75-9982: Baltimore demonstrates gas pyrolysis: resource recovery from solid waste./ Washington U.S. Environmental Protection Agency for sale by the Suft. of Docs., U.S. Govt. Print. Off. 1975. 24 p.
- LRS75-12348: Environmental aspects of chemical use in rubber processing operations (March 1975, Akron, Ohio);/conference Proceedings. Washington, Office of Toxic Substances, Environmental Protection Agency, 1975. 452 p.
- READY FOR NEW COMMAND OR NEW ITEM NBR (FOR NEXT PAGE, XMIT ONLY):

FILE:CITN: TITLE/LINE--SET 8

ITEMS 9-16 OF 43

- LRS75-13710: Nashville points the way: turns waste into fuel without pollution./ Catalyst for environmental quality, v. 4, no. 4, 1975: 17-19.
- LRS75-14230: Does refuse pay as a utility fuel?/ Solid wastes management refuse removal Journal, v. 18, Sept. 1975: 48, 50, 52.
- LRS75-14489: An assessment of energy recovery methods applicable to domestic refuse disposal./ Resources Policy, v. 1, Sept. 1975: 284-294.
- LRS75-17282: Megawatts from municipal waste./ IEEE spectrum, v. 12, Nov. 1975: 46-50.
- LRS75-17463: Biomass energy./ Astronautics & aeronautics, v. 13, Nov. 1975: 64-70.
- LRS75-17520: Resource recovery and waste reduction:/third report to Congress. Washington, For sale by the Suft. of Docs., U.S. Govt. Print. Off. 1975. 96 p.
- LRS75-22059: An evaluation of the use of agricultural residues as an energy feedstock./ Washington, National Science Foundation, 1975. 82 p.
- LRS76-3630: Materials relating to the Resource Conservation and Recovery Act of 1976./ Washington, U.S. Govt. Print. Off., 1976. 86 p.
- READY FOR NEW COMMAND OR NEW ITEM NBR (FOR NEXT PAGE, XMIT ONLY):

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FILE:OITN: TITLE/LINE--SET 8

ITEMS 17-24 OF 43

- LRS76-3631: Readings on solid waste management and resource recovery./ Prepared for the Subcommittee on the Environment and the Atmosphere of the Committee on Science and Technology, U.S. House of Representatives. Washington, U.S. Govt. Print. Off., 1976. 196 p.
- LRS76-4072: Anaerobic digestion of solid waste and sewage sludge into methane./ Compost science, v. 17, Jan. 1976: 26-30.
- LRS76-4315: "Garbage Fever."/ Industry week, v. 189, Apr. 19, 1976: 38-43, 45.
- LRS76-4723: Energy and resource recovery from solid wastes./ Resource recovery and conservation, v. 1, Apr. 1976: 207-216.
- LRS76-4728: An evaluation of methane production from solid waste./ Resource recovery and conservation, v. 1, Apr. 1976: 245-255.
- LRS76-4766: The markets for and the economics of heat energy from solid waste incineration./ Resource recovery and conservation, v. 1, Apr. 1976: 197-206.
- LRS76-4779: Feasibility study for burning refuse-derived fuel in the District of Columbia by Potomac Electric Power Company./ Resource recovery and conservation, v. 1, Apr. 1976: 217-224.
- LRS76-5042: Energy from refuse by bioconversion, fermentation and residue disposal processes./ Resource recovery and conservation, v. 1, Apr. 1976: 295-313.

READY FOR NEW COMMAND OR NEW ITEM NBR (FOR NEXT PAGE, XMIT ONLY):

FILE:OITN: TITLE/LINE--SET 8

ITEMS 25-34 OF 43

- LRS76-5858: Processing energy from wastes./ Environmental science & technology, v. 10, May 1976: 430-435.
- LRS76-6007: Metals in the wastes we burn?/ Environmental science & technology, v. 10, May 1976: 436-439.
- LRS76-6358: Flower Power: Prospects for photosynthetic energy./ Bulletin of the atomic scientists, v. 32, May 1976: 48-58.
- LRS76-6370: Garbage Power: the renewable energy resource./ Catalyst, v. 5, no. 2, 1976: 21, 24-26.
- LRS76-7146: Tower Power: producing fuels from solar energy./ Bulletin of the atomic scientists, v. 32, May 1976: 58-62.
- LRS76-8155: Instead of wasting nonrenewable energy, why don't we exploit our wastes?/ Science forum, v. 9, June 1976: 3-6.
- LRS76-8187: Solid waste--materials and energy recovery; /twenty-fifth report. Washington, U.S. Govt. Print. Off., 1976. 24 p.
- LRS76-8468: Solid waste management and resource recovery./ Hearings, 94th Cong., 2d sess. Washington, U.S. Govt. Print. Off., 1976. 475 p.
- LRS76-8711: Tapping resources in municipal solid waste./ Science, v. 191, Feb. 20, 1976: 669-675.
- LRS76-8714: Renewable resources for the production of fuels and chemicals./ Science, v. 191, Feb. 20, 1976: 773-776.

READY FOR NEW COMMAND OR NEW ITEM NBR (FOR NEXT PAGE, XMIT ONLY):

FILE:CITN: TITLE/LINE--SET 8

ITEMS 35-42 OF 43

LRS76-11418: Resource Conservation and Recovery Act of 1976./ Hearings, 94th Cong., 2d sess., on H.R. 14496. June 29-30, 1976. Washington, U.S. Govt. Print. Off., 1976. 159 p.

LRS76-12256: Resource Conservation and Recovery Act of 1976/report on H.R. 14496 including cost estimates of the Congressional Budget Office. Washington, U.S. Govt. Print. Off., 1976. 136 p.

LRS76-12918: Controlled-air incineration--key to practical production of energy from wastes./ Public works, v. 107, Sept. 1976: 72-75, 136, 138.

LRS76-13502: Proceedings./ New York, American Society of Mechanical Engineers c1976 585 p.

LRS76-19682: Fuel gas recovery from controlled landfilling of municipal wastes. / Resource recovery and conservation, v. 2, Dec. 1976: 103-117.

LRS76-19965: Gasification of solid wastes in fixed beds./ Mechanical engineering, v. 98, July 1976: 24-29.

LRS77-208: Trashing the energy crisis./ New times, v. 8, Jan. 21, 1977: 41-42, 44-46.

LRS77-466: Reclamation of energy from solid waste: theory and practice: a selected, annotated bibliography for municipal officials./ Monticello, Ill., 1977. 37 p.

READY FOR NEW COMMAND OR NEW ITEM NBR (FOR NEXT PAGE, XMIT ONLY):

FILE:CITN: TITLE/LINE--SET 8

ITEM 43 OF 43

LRS76-963: Readings on solid waste management and resource recovery./ Apr. 1976. 196 p.

LAST ITEM SHOWN. READY FOR NEW COMMAND OR ITEM NBR:

Reference Section
Science and Technology Division
Library of Congress

"Scorpio" System

Titles indexed under both "Solid Waste"
and "Hazardous Substances"

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FILE:OITN: TITLE/LINE--SET 10

ITEMS 1-8 OF 15

- LRS74-12748: Refuse industry sets sole charge of hazardous materials. / Solid wastes management/refuse removal Journal, v. 17, June 1974: 16, 47, 85.
- LRS74-12749: U.S. Navy jettisons 'heavo-ho' handling of packaging items at sea. / Solid wastes management, v. 17, June 1974: 22-23, 57-58, 66, 70, 72.
- LRS74-13324: Disposal of hazardous wastes. / Report to Congress... Pursuant to section 212 of the Solid Waste Disposal Act, as amended. Washington, U.S. Govt. Print. Off., 1974. 81 p.
- LRS74-24186: Oregon surveys its hazardous wastes. / Environmental science & technology, v. 8, Dec. 1974: 1080-1084.
- LRS74-29939: Recommended methods of reduction, neutralization, recovery or disposal of hazardous waste. / Redondo Beach, Calif., TRW Systems Group distributed by NTIS 1974. 205 p.
- LRS75-4083: Incineration in hazardous waste management. / Washington U.S. Environmental Protection Agency, 1975. 104 p.
- LRS75-12348: Environmental aspects of chemical use in rubber processing operations (March 1975, Akron, Ohio); / conference proceedings. Washington, Office of Toxic Substances, Environmental Protection Agency, 1975. 452 p.
- LRS75-14527: Landfill disposal of hazardous wastes: a review of literature and known approaches. / Washington U.S. Environmental Protection Agency, 1975. 36 p.

READY FOR NEW COMMAND OR NEW ITEM NBR (FOR NEXT PAGE, XMIT ONLY):

FILE:OITN: TITLE/LINE--SET 10

ITEMS 9-15 OF 15

- LRS75-15347: Ultimate disposal of spilled hazardous materials. / Chemical engineering, v. 82, Oct. 27, 1975: 107-114.
- LRS75-20792: Information about hazardous waste management facilities. / Washington U.S. Environmental Protection Agency, 1975. 130 p.
- LRS76-9822: Pharmaceutical industry: hazardous waste generation, treatment, and disposal. / Washington 1976. 178 p.
- LRS76-16919: Status of legislation, grants and proposed hazardous waste regulations. / Journal of environmental health, v. 39, Sept.-Oct. 1976: 83-86.
- LRS76-17572: Incineration of industrial wastes. / Chemical engineering, v. 83, Oct. 18, 1976: 115-121.
- LTR75-2471: Summary of materials-related legislation introduced into the 94th Congress. / Aug. 19, 1975. 29 p.
- LTR76-349: Summary of materials-related legislation introduced into the 94th Congress. / Feb. 2, 1976. 38 p.
- LAST ITEM SHOWN. READY FOR NEW COMMAND OR ITEM NBR:

Reference Section
Science and Technology Division
Library of Congress

"Scorpio" System

Titles and abstracts relevant to resource
recovery and/or to hazardous waste, as
retrieved using the index category "Solid Waste"

LRS74-2048 . ITEM 5 OF 557 IN SET 6

Wingerler, Eugene J.

Resource recovery: an opportunity for government-industry partnership. Solid wastes management/refuse removal Journal, v. 17, Feb. 1974: 36, 62, 81.

Discusses state-controlled plans in Connecticut and Wisconsin.

DESCRIPTORS (INDX):

Refuse and refuse disposal--Connecticut

Refuse and refuse disposal--Wisconsin

Recycling of waste products--Connecticut--State laws

PROFILE TERMS (BUCK):

Materials management

Solid wastes

State governments

TP 995

READY FOR NEW COMMAND:

LRS74-2267 . ITEM 9 OF 557 IN SET 6

Day, John.

Paper makers have wood to burn (and some oil, coal and natural gas, too). Exchange, v. 35, Mar. 1974: 2-4.

"Producers of paper have turned to waste wood as fuel for their factories. And there are coal, oil and gas reserves on their land."

DESCRIPTORS (INDX):

Paper and paper products--U.S.

Fuel--U.S.

Petroleum--U.S.

Energy conservation--U.S.

Recycling of waste products--U.S.

PROFILE TERMS (BUCK):

Forests and forestry

Mines and mineral resources

Power resources

Solid wastes

HD 9820

READY FOR NEW COMMAND:

LRS74-3502 . ITEM 17 OF 557 IN SET 6

Status report on: the nation's first statewide system for recovering materials and energy. Resource recovery, v. 1, Jan.-Mar. 1974: 18-21.

Discusses Connecticut's work on such a statewide system.

DESCRIPTORS (INDX):

Recycling of waste products--Connecticut

PROFILE TERMS (BUCK):

Solid wastes

State governments

TP 995

READY FOR NEW COMMAND:

LRS74-3522 ITEM 20 OF 557 IN SET 6

Marvinney, Sandy.

Power from the manure pile. Conservationist, v. 28, Apr.-May 1974: 7-9.
Pass methane generation has its simplest and perhaps most practical application on the farm, but notes that human sewage and municipal garbage are also potential sources of methane for heat, light and power.

DESCRIPTORS (INDX):

Synthetic fuel--U.S.
Farm manure--U.S.
Recycling of waste products--U.S.

PROFILE TERMS (BUCK):

Mines and mineral resources
Power resources
Solid wastes
Water pollution

TF 995

READY FOR NEW COMMAND:

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LTR76-963 ITEM 556 OF 557 IN SET 6

Reisch, Mark.

Readings on solid waste management and resource recovery. Apr. 1976. 196 p.
Issued as a committee print. House Committee on Science and Technology,
Subcommittee on the Environment and the Atmosphere, 94th Cong., 2d sess.

DESCRIPTORS (INDX):

Refuse and refuse disposal--U.S.
Refuse and refuse disposal--U.S.--Law and legislation
Refuse and refuse disposal--U.S.--Research
Refuse and refuse disposal--U.S.--Finance
Recycling of waste products--U.S.
Sewage disposal--U.S.
Refuse as fuel--U.S.
Solid Waste Disposal Act
Resource Recovery Act

PROFILE TERMS (BUCK):

LTR

TF 995

READY FOR NEW COMMAND:

LRS77-466 ITEM 540 OF 557 IN SET 6

Burg, Nan C.

Reclamation of energy from solid waste: theory and practice: a selected, annotated bibliography for municipal officials. Monticello, Ill., 1977. 37
(Council of Planning Librarians. Exchange bibliography 1228)

DESCRIPTORS (INDX):

Refuse as fuel--U.S.--Bibliography

PROFILE TERMS (BUCK):

Power resources
Solid wastes

TF 360

READY FOR NEW COMMAND:

LRS76-19965 ITEM 537 OF 557 IN SET 6

Essen, A. C. W. Kraatz, Ronald.

Gasification of solid wastes in fixed beds. Mechanical engineering, v. 98, July 1976: 24-29.

Discusses the fixed bed gasifier "the basic mechanisms involved and variations produced by feedstock, gasification oxidizer, and slagging versus non-slagging operation. The gas produced has potential for a wide range of uses, from simple steam generators to more sophisticated gas turbine and fuel cell combinations."

DESCRIPTORS (INDX):

Refuse as fuel

PROFILE TERMS (BUCK):

Power resources

Solid wastes

TP 360

READY FOR NEW COMMAND:

LRS76-19682 ITEM 533 OF 557 IN SET 6

Ausenstein, D. C., and others.

Fuel gas recovery from controlled landfilling of municipal wastes. Resource recovery and conservation, v. 2, Dec. 1976: 103-117.

The authors present "a novel low capital/operating cost system for fuel gas recovery from solid waste." The authors observe that "the system evaluated has potential for making possible the economic recovery of fuel gas from solid waste (or other solid substrates) through substantial reduction in the capital and operating costs of a conventional anaerobic digestion system."

DESCRIPTORS (INDX):

Refuse as fuel--U.S.--Evaluation

Sewage sludge--U.S.

Landfills--U.S.

Recycling of waste products--U.S.--Costs

PROFILE TERMS (BUCK):

Power resources

Solid wastes

TP 360

READY FOR NEW COMMAND:

LRS76-19489 ITEM 530 OF 557 IN SET 6

Terry, R. C. Berkowitz, J. B. Porter, C. H.

Waste clearinghouses and exchanges. Chemical engineering progress, v. 71, Dec. 1976: 58-62.

The authors assess clearinghouses which transfer information about industrial wastes available and wastes sought as feed stock and exchanges which offer services to transfer waste materials. They conclude that although these organizations are not likely to be very profitable business enterprises, they do offer a different approach to finding new uses for organic solvents, alkali wastes, and wastes rich in metals."

DESCRIPTORS (INDX):

Recycling of waste products--U.S.

Recycling of waste products--Europe

LRS76-18862 ITEM 528 OF 557 IN SET 6

Gehr, Marilyn.

Solid waste management: a selected annotated bibliography. Albany, New York State Library, Legislative Service, 1976. 3 v.

Partial contents.--The basics.--Technical information.--Project plans and operating programs.

DESCRIPTORS (INDX):

Refuse and refuse disposal--U.S.--Bibliography

PROFILE TERMS (BUCK):

Solid wastes

TP 995

LIMITED AVAILABILITY

READY FOR NEW COMMAND:

LRS76-17571 ITEM 522 OF 557 IN SET 6

Ghassemi, Masood. Quinlivan, Sandra C. Day, Harold R.

Landfills for pesticide waste disposal. Environmental science & technology, v. 10, Dec. 1976: 1209-1214.

This paper presents information on the social, political, economic, and institutional aspects of the establishment and operation of seven existing landfills accepting pesticide wastes.

DESCRIPTORS (INDX):

Landfills--U.S.

Pesticides--U.S.

PROFILE TERMS (BUCK):

Pesticides

Solid wastes

TP 995

READY FOR NEW COMMAND:

LRS76-17561 ITEM 521 OF 557 IN SET 6

O'Neil, Raymond K. Locke, Edward R.

Solid wastes planning: signposts on road to regionalization. Solid wastes management, v. 19, Oct. 1976: 24, 26, 54, 55.

This article focuses on some of the institutional and financial considerations involved in adopting a regional approach to solid wastes management.

DESCRIPTORS (INDX):

Refuse and refuse disposal--U.S.--Finance

Regional planning--U.S.

PROFILE TERMS (BUCK):

Solid wastes

-81-

TP 995

READY FOR NEW COMMAND:

LRS76-16919 ITEM 517 OF 557 IN SET 6

Lehman, John P.

Status of legislation, grants and proposed hazardous waste regulations. Journal of environmental health, v. 39, Sept.-Oct. 1976: 83-86.

Reviews Federal and state legislation and grants for research for land disposal and management of hazardous industrial wastes.

DESCRIPTORS (INDX):

Waste products--U.S.

Refuse and refuse disposal--U.S.--Law and legislation

Refuse and refuse disposal--U.S.--Research

Refuse and refuse disposal--U.S.--State laws

Hazardous substances--U.S.

Grants-in-aid--U.S.

PROFILE TERMS (BUCK):

Chemicals

Environmental law

Solid wastes

TP 995

READY FOR NEW COMMAND:

LRS76-16902 ITEM 515 OF 557 IN SET 6

Lande, Sheldon S.

Local guidelines for disposal of unwanted pesticides and empty pesticide containers: an example. Journal of environmental health, v. 39, Sept.-Oct. 1976: 87-89.

Describes how "Allegheny County, Pennsylvania, developed a plan for disposal of pesticides and pesticide containers, adapting the U.S.

Environmental Protection Agency's recommended procedures to existing disposal sites and relevant local regulations."

DESCRIPTORS (INDX):

Pesticides--Pennsylvania

Refuse and refuse disposal--Pennsylvania

PROFILE TERMS (BUCK):

Environmental health

Pesticides

Solid wastes

SB 601 B

READY FOR NEW COMMAND:

LRS76-12918 ITEM 484 OF 557 IN SET 6

Hofmann, Ross E.

Controlled-air incineration--key to practical production of energy from wastes. Public works, v. 107, Sept. 1976: 72-75, 136, 138.

Discusses the controlled-air small incinerator for burning solid wastes to produce energy. States that "the solid waste direct energy production systems appear to offer the greatest net energy return or gain against the energy required to operate these processes."

DESCRIPTORS (INDX):

Refuse as fuel--U.S.

PROFILE TERMS (BUCK):

Power resources

Solid wastes

TP 360

LRS76-5203 ITEM 452 OF 557 IN SET 6

Hardy, William E., Jr. Grissom, Curtis L.

An economic analysis of a regionalized rural solid waste management system. American Journal of agricultural economics, v. 58, May 1976: 175-185.

Presents "the results of a research project designed to determine the least cost solid waste management system for a selected five-county area of northwest Alabama."

DESCRIPTORS (INDEX):

Landfills--Alabama--Finance

Cost effectiveness

Mathematical models

PROFILE TERMS (BUCK):

Solid wastes

TP 595

READY FOR NEW COMMAND:

LRS76-8468 ITEM 445 OF 557 IN SET 6

U.S. Congress. House. Committee on Government Operations. Conservation, Energy, and Natural Resources Subcommittee.

Solid waste management and resource recovery. Hearings, 94th Cons., 2d sess. Washington, U.S. Govt. Print. Off., 1976. 475 p. Hearings held Mar. 23...31, 1976.

DESCRIPTORS (INDEX):

Refuse as fuel--U.S.

Recycling of waste products--U.S.

Refuse and refuse disposal--U.S.

PROFILE TERMS (BUCK):

Materials management

Power resources

Solid wastes

REC 2106

AVAIL FROM COMM OR DOC RM

READY FOR NEW COMMAND:

LRS76-8044 ITEM 442 OF 557 IN SET 6

Furr, A. Keith, and others.

Multielement and chlorinated hydrocarbon analysis of municipal sewage sludges of American cities. Environmental science & technology, v. 10, July 1976: 683-687.

Report on "an analytical survey of 68 elements, dieldrin, and polychlorinated biphenyls (PCB's)" which "was conducted in municipal sewage sludges sampled during 1972-73 from 16 American cities using several instrumental methods."

DESCRIPTORS (INDEX):

Sewage sludge--U.S.

Metals--U.S.

Trace elements--U.S.

Pesticide residues--U.S.

Polychlorinated biphenyls--U.S.

LRS76-5858 ITEM 425 OF 557 IN SET 6

Wilson, E. Milton, Freeman, Harry M.

Processing energy from wastes. Environmental science & technology, v. 10, May 1976: 430-435.

Describes existing and possible processes for conversion of solid, liquid, and gas wastes to energy.

DESCRIPTORS (INDX):

Refuse as fuel--U.S.

U.S. Environmental Protection Agency.

PROFILE TERMS (BUCK):

Power resources

Solid wastes

TP 360

READY FOR NEW COMMAND:

LRS76-5042 ITEM 421 OF 557 IN SET 6

Pfeffer, John T. Liebman, Jon C.

Energy from refuse by bioconversion, fermentation and residue disposal processes. Resource recovery and conservation, v. 1, Apr. 1976: 295-313.

Discussion of the anaerobic fermentation process; includes a laboratory study of gas production at various temperatures, dewatering characteristics of spent slurry, and the energy recovery of the spent cake. A mathematical simulation of the total system evaluates the economic implications of the process.

DESCRIPTORS (INDX):

Refuse as fuel--U.S.--Research

Methane

PROFILE TERMS (BUCK):

Power resources

Solid wastes

TP 360

READY FOR NEW COMMAND:

LRS76-4766 ITEM 418 OF 557 IN SET 6

Wilson, Maurice J. Swindle, David W., Jr.

The markets for and the economics of heat energy from solid waste incineration. Resource recovery and conservation, v. 1, Apr. 1976: 197-206.

Review of disposal and composition of solid wastes; authors conclude that there is a market for the caloric heat energy components of waste.

DESCRIPTORS (INDX):

Refuse as fuel--U.S.

Recycling of waste products--U.S.

PROFILE TERMS (BUCK):

Power resources

Solid wastes

TP 360

READY FOR NEW COMMAND:

LRS76-4728 ITEM 417 OF 557 IN SET 6

Kisferty, R. G. Sadek, S. E. Wise, D. L.

An evaluation of methane production from solid waste. Resource recovery and conservation, v. 1, Apr. 1976: 245-255.

Technical and economic evaluation of a process to convert municipal solid waste to a pipeline quality gas. The anaerobic process is the only current one which is technically feasible, but it still is economically at the upper limits of today's technology.

DESCRIPTORS (INDX):

Refuse as fuel--U.S.

Methane

PROFILE TERMS (BUCK):

Power resources

Solid wastes

TP 360

READY FOR NEW COMMAND:

Reproduced from
best available copy.

LRS76-4723 ITEM 416 OF 557 IN SET 6

Mallan, G. M. Tillow, E. I.

Energy and resource recovery from solid wastes. Resource recovery and conservation, v. 1, Apr. 1976: 207-216.

Summarizes research program designed to process oil and high grade materials from municipal refuse which would find a ready, high value market. Primarily describes the recovery of glass, aluminum and pyrolytic oil.

DESCRIPTORS (INDX):

Recycling of waste products--U.S.

Refuse as fuel--U.S.

Glass and glass industry--U.S.

Aluminum--U.S.

PROFILE TERMS (BUCK):

Materials management

Power resources

Solid wastes

TP 995

READY FOR NEW COMMAND:

LRS76-4315 ITEM 415 OF 557 IN SET 6

Sheridan, John H.

"Garbage Power." Industry week, v. 189, Apr. 19, 1976: 38-43, 45.

Describes technical methods of extracting energy from garbage now being explored.

DESCRIPTORS (INDX):

Refuse as fuel--U.S.

PROFILE TERMS (BUCK):

Power resources

Solid wastes

TP 360

READY FOR NEW COMMAND:

LRS76-4072 ITEM 414 OF 557 IN SET 6

Hitte, Steven J.

Anaerobic digestion of solid waste and sewage sludge into methane. Compost science, v. 17, Jan. 1976: 26-30.

Evaluates the potential for processing organic wastes using anaerobic digestion (a biological process wherein organic matter decomposes in an oxygen-deficient space); the process can produce methane without increasing air pollution.

DESCRIPTORS (INDX):

Recycling of waste products

Methane

Refuse as fuel

Air pollution control

PROFILE TERMS (BUCK):

Power resources

Solid wastes

TP 995

READY FOR NEW COMMAND:

LRS76-3631 ITEM 412 OF 557 IN SET 6

U.S. Library of Congress. Congressional Research Service.

Readings on solid waste management and resource recovery. Prepared for the Subcommittee on the Environment and the Atmosphere of the Committee on Science and Technology, U.S. House of Representatives. Washington, U.S. Govt. Print. Off., 1976. 196 p.

At head of title: Committee print.

"Serial Y"

DESCRIPTORS (INDX):

Refuse and refuse disposal--U.S.

Refuse and refuse disposal--U.S.--Law and legislation

Refuse and refuse disposal--U.S.--Research

Refuse and refuse disposal--U.S.--Finance

Recycling of waste products--U.S.

Sewage disposal--U.S.

Refuse as fuel--U.S.

Solid Waste Disposal Act

Resource Recovery Act

PROFILE TERMS (BUCK):

Materials management

PAGE 1 OF 2. READY FOR NEW COMMAND OR PAGE # (FOR NXT PG, XMIT):

LRS76-3630 ITEM 411 OF 557 IN SET 6

U.S. Congress. House. Committee on Interstate and Foreign Commerce.

Subcommittee on Transportation and Commerce.

Materials relating to the Resource Conservation and Recovery Act of 1976.

Washington, U.S. Govt. Print. Off., 1976. 86 p.

At head of title: 94th Cong., 2d sess. Committee print no. 20.

DESCRIPTORS (INDX):

Refuse and refuse disposal--U.S.--Law and legislation

Materials management--U.S.--Law and legislation

Recycling of waste products--U.S.

Energy conservation--U.S.

Refuse as fuel--U.S.

Resource Conservation and Recovery Act (Proposed)

Solid Waste Disposal Act

LR875-21775 ITEM 390 OF 557 IN SET 6

Incinerator and solid waste technology: a collection of papers on the subject of incinerator and solid waste technology from 1962-1975. New York, American Society of Mechanical Engineers 1975 415 p.

"This volume has been prepared as a source of information on incinerator and solid waste technology as presented during the past 13 years in papers which are considered to be of permanent interest or value, but which have not been published heretofore in a manner that makes them readily or generally available to the engineering profession."

DESCRIPTORS (INDX):

Refuse and refuse disposal--Addresses, statements, etc.

PROFILE TERMS (BUCK):

Solid wastes

EF (Reisch)

LIMITED AVAILABILITY

READY FOR NEW COMMAND:

Federal Government Agencies
with Environmental Program
Responsibilities

Resource Recovery and Hazardous Waste

Environmental Protection Agency

Regional Office, Region IV
1421 Peachtree Street, N.E.
Atlanta, Georgia

Administrator (404) 881-5727
Public Affairs Director (404) 881-3004

Environmental Protection Agency, Headquarters
Office of Solid Waste Management Programs (OSWMP)
401 M Street, S.W.
Washington, D.C. 20460

Sheldon Meyers, Deputy Assistant Administrator (202) 755-9170
Information (202) 755-0707
Technical Information Staff, Thomas F. Williams (202) 755-9170

The OSWMP is the central office in EPA concerned with all aspects of solid waste, including both resource recovery and hazardous waste. This office administers programs, conducts research, provides information, and provides technical assistance in all the various areas of solid waste management and disposal.

Federal Government Agencies
with Environmental Program
Responsibilities

Resource Recovery -- Energy

Energy Research and Development Administration (ERDA)

Assistant Administrator for Conservation

20 Massachusetts Avenue, N.W.

Washington, D.C. 20545

(202) 376-4934 Information (202) 376-4064

Austin N. Heller, Assistant Administrator

This office is responsible for research and development of energy conservation measures, including extraction of energy from solid waste such as municipal garbage.

Bureau of Mines

College Park Metallurgy Research Center

College Park, Maryland

The Bureau of Mines operates a demonstration resource recovery plant which processes raw urban refuse into recovered materials and fuel.

National Science Foundation

Division of Advanced Environmental Research and Technology

Regional Environmental Management Program

1800 G Street, N.W.

Washington, D.C. 20550

(202) 632-4356 Information (202) 632-5728

Josephine K. Doherty, Program Manager

This office of NSF makes grants for research into waste processing and management.

Federal Government Agencies
with Environmental Program
Responsibilities

Hazardous Waste

Environmental Protection Agency
401 M Street, N.W.
Washington, D.C. 20550

Office of the Assistant Administrator for Water and
Hazardous Materials

Office of Pesticide Programs
(202) 755-8036 Information (202) 755-0707
Edwin L. Johnson, Deputy Assistant Administrator

Office of Toxic Substances
(202) 755-8040 Information (202) 755-0707
Glenn E. Schweitzer, Director

Criteria and Standards Division, Hazardous Discharge
(202) 755-0100

Kenneth Mackenthun
This office develops toxic effluent and hazardous discharge standards.)

Information Branch, Office of Pesticide Programs
(202) 426-2432

Paul Fuschini

Office of Toxic Substances
(202) 755-6956

Joni Repash

Department of Health, Education and Welfare
Food and Drug Administration (FDA)
National Center for Toxicological Research
5600 Fishers Lane
Rockville, Maryland 20852
(301) 443-3155 (Research Center located in Jacksonville, Alabama)

This agency conducts research on effects of toxic substances on the environment and on man.

Resource Recovery and Hazardous Waste

SWIRS-Solid Waste Information Retrieval System

Environmental Protection Agency

401 M Street, S.W.

Washington, D.C. 20460

(202) 755-9153 Information, (202) 755-0707

John A. Connolly, Chief

This system operated by the Office of Solid Waste Management Programs, collects and disseminates information on all aspects of solid waste management and disposal, including both resource recovery for energy and materials, and hazardous waste management and disposal. In response to a request on a SWIRS Search Request form (available from the above-listed office), SWIRS will make a comprehensive computerized search for any type of information on any topic related to solid waste management. In addition to citations, SWIRS sends abstracts of publications which may then be requested on interlibrary loan.

Federal Government Data Systems
and Information Centers

Hazardous Waste

Toxicology Information Program of MEDLARS--
Medical Literature Analysis and Retrieval System
National Library of Medicine
Bethesda, Maryland

A computerized information retrieval system for information
and data on toxicological effects of various compounds.

Biomedical Studies Groups (BMS)
Environmental Information System Office
Oak Ridge National Laboratory
P. O. Box Y
Oak Ridge, Tennessee 37830
(615) 483-8611 Ext. 3-5476

James Edward Huff, Ph.D., Director

Sponsors of this computerized information system are the
Toxicology Information Program of the National Library
of Medicine; the Forest Service, USDA; and the National Environ-
mental Research Center of EPA. Literature and data is stored and
retrieved on environmental pollutants, pesticides, industrial
chemicals, poisons, and a number of other toxicologically-related
subjects. Services include furnishing of abstracts, state-of-
the-art reviews, data compilations, critical reviews, and biblio-
graphies. Publications are sold through NTIS. Although ser-
vices are provided primarily for the sponsoring agencies, other
inquiries are handled as time permits.

Pesticide Effects on Health
Division of Community Studies
Environmental Protection Agency
Chamblee, Georgia

This office collects clinical and biochemistry information on
pesticides and their effects on health, and disseminates informa-
tion through publications and references services.

National Bureau of Standards
Chemical Kinetics Information Center
Bethesda, Maryland

This information organization collects and retrieves data of a
technical nature on toxic results of chemical interactions.

Hazardous Waste (continued)

STORET, Water Quality Technical Data and Information System
STORET Users' Assistance Office
(202) 426-7792

Louis Hoelman, Systems Analyst

The STORET system maintains a computerized file of water quality data and other pollution control information. The Users' Assistance Office is quite helpful in detailing the capabilities of the system and assisting with requests for particular types of information.

One of the inputs into the STORET system is the data from the water quality sampling stations operated by various agencies. An example of the variety of types of chemical agents sampled for is included in the materials packet. This system represents a valuable information resource. However, to use the STORET system for locating and measuring levels of hazardous substances in water resources requires rather sophisticated technical expertise. The Users' Assistance Office will help a potential user to find those capable of rendering such technical assistance.

Conferences

The following listing is representative of conferences held during the past year (1976) which were relevant to either the resource recovery or hazardous waste fields. Contacts shown would be useful for arranging to get copies of proceedings and for learning about upcoming conferences, and as referral sources as well. For listings of 1977 conferences see the examples of Solid Waste Report (p. 24) and Sludge (p. 8) under the section on Newsletters.

Resource Recovery

March 10-15

National Association of Recycling Industries 64th Annual Convention

Bal Harbour, Florida

Contact: NARI, 330 Madison Avenue, New York, New York 10017

May 4-6

31st Annual Purdue Industrial Waste Conference

West Lafayette, Indiana

Contact: A. J. Steffen, Room 310, Civil Engineering Building
Purdue University, West Lafayette, Indiana 47907

May 23-26

National Waste Conference and Exhibit

Boston, Massachusetts

Contact: Paul Drummond, American Society of Mechanical Engineers,
345 East 47th Street, New York, New York 10017

July 25-30

Recycling Implementation Conference: Engineering and Economics

Rindge, New Hampshire

Contact: Engineering Foundation, 345 East 47th Street,
New York, New York 10017

Solid Waste Processing Conference

Oxford, Ohio

Contact: Richard A. Matula, Drexel Institute of Technology,
Philadelphia, Pennsylvania

Resource Recovery (continued)

December 8-10

5th National Conference on Waste Management Technology and
Resource Recovery

Dallas, Texas

Contact: National Solid Waste Management Association,
Jeanne Hayes, Suite 800
1730 Rhode Island Avenue, N.W., Washington, D.C. 20036

April 5-6

Combustion of Alternate Fuels and Combustion of Coal
Columbus, Ohio

Central States Section of the Combustion Institute

Contact: Battelle-Columbia Laboratories, 505 King Avenue,
Columbus, Ohio 43201

Conferences

Hazardous Waste

September 26-29

National Agricultural Chemicals Association 43rd Annual Meeting
White Sulphur Springs, West Virginia

Contact: NACA, 1155 15th Street, N.W., Washington, D.C. 20005

December 9-10

Toxic Substances Symposium
Washington, D.C.

Contact: Nancy McNerney, Government Institutes, 4733 Bethesda
Avenue, Washington, D.C. 20014

ENVIRONMENTAL INFORMATION

RESOURCES FOR

STATE AND LOCAL ELECTED OFFICIALS

solid waste

SECONDARY LITERATURE

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McGraw-Hill, Encyclopedia of Environmental Science, Daniel N. Lapedes, Editor, New York: McGraw-Hill, 1971, pp. 573-581, "Solid Waste Disposal."

This general article summarizes the problems of solid waste in this country today and discusses the basic mechanisms for disposing of it. Three factors are predominantly responsible for the increased problem of solid waste disposal since World War II: increased population, increased urbanization, and increased generation of solid waste per person. The increased per capita generation of solid waste is due to changes in industrial and marketing techniques -- most notably the creation of new packaging approaches, new items to be packaged (such as convenience foods), and disposable products. Typical physical composition of municipal solid waste by weight is 50 percent paper, 10 percent metal, 10 percent glass, 20 percent food wastes, 3 percent yard waste, 1 percent wood, 1 percent plastic, 1 percent cloth and rubber, and 4 percent inert material.

In addition to municipal sources of wastes, two other types of sources are discussed: agricultural wastes -- the composition and volume of which has changed significantly over recent years due to new methods of animal and crop raising -- and mineral and fossil fuel wastes. The total annual solid waste load generated from municipal and industrial sources in the United States is estimated at more than 326 million metric tons (a metric ton = 2,204.62 pounds), 227 million metric tons of which are household, commercial and municipal wastes and 99 million metric tons of which results from industrial activities. Mineral solid waste generation is estimated at 1 million metric tons annually and is expected to increase to nearly 2 million tons as well.

Several implications flow from these statistics. First, the public health effects of this quantity of solid waste should not be underestimated. Mismanagement of solid wastes has often resulted in water and air pollution, in several different ways. Runoff and leachate from open dumps and landfills have contaminated ground and surface water. Open burning or

incineration have resulted in air pollution. Harmful effects on human health have come about through these and other more complex processes, often as a result of incomplete knowledge of the interactive effects of various residues and chemicals.

Apart from the health implications of this huge volume of solid waste generation, the natural resources contained in these wastes -- many of them irreplaceable -- are being lost forever to man's use. Formation of iron ore, for example, requires millions of years of geological processes. Extraction of this metal from the earth requires considerable time, effort, and money. Iron ore is processed into a variety of materials and items useful to man. However, when these items have lost their utility to man they are discarded, as "solid waste," and usually buried, lost forever to man's use. Alternatively, the iron used in the products could be recovered and reused, repeatedly, thus conserving unmined reserves to the greatest extent possible. The same is true for many other natural resources utilized by man. Already shortages of some of the less common resources have occurred which could have been avoided through wise disposal and recovery processes. Increasingly, solid wastes are being seen as a "resource out of place."

The four major techniques for disposing of solid waste are summarized in this article: Sanitary landfilling, incineration, composting, and recycling. Problems with composting and with recycling as newer techniques are discussed particularly with respect to finding and/or developing markets for the products recovered. Secondary materials markets are thought by many experts to potentially exist in many as yet unexplored areas. Examples of such potentials include the development of animal feedstuffs from cellulosic wastes such as paper and sugarcane waste, use of crushed glass as a paving material, and many other types of possible uses for waste materials which are presently being researched.

Energy Recovery. One experimental energy-recovering project for producing electrical power is also discussed. In what is known as a "fluidized bed incinerator" (called CPU-400) solid waste is burned at high pressure to produce hot gasses to power a turbine, which in turn drives an electrical generator. Municipal waste has been found to be an excellent fuel source, with a heating value of 2268 btu/kg -- approximately one-half the heating value of high grade coal.

The CPU-400 developed in Palo Alto, California by the Combustion Power Company, is expected to produce about 15,000 kw of electric power, while burning 363 metric tons of municipal refuse daily. Approximately 10 per cent of the community's electric power needs are expected to be met by this unit, thus also offsetting part of the disposal costs.

In conclusion, this article notes that the solid waste management system must be developed to suit the special requirements of each locality -- in view of the variations in nature and quantity of solid wastes and economic conditions. The ideal is that each system permit maximum resource recovery, with hygienic and pollution-free collection, and safe disposal of non-recyclable materials.

Bibliographies

1975 Annual Index
Weekly Government Abstracts (WGA)
Environmental Pollution and Control Series
NTIS, 5285 Port Royal Road
Springfield, Virginia 22161
(703) 557-4600

Using this index (the 1976 Annual Index was not yet available), the following compilation of Federal and Federally-sponsored research reports was made. All of these are available from NTIS. The NTIS order number is indicated on the bottom left of the entry. Prices for paper copy (PC) and microfilm (MF) are indicated on the bottom right. Index headings searched for the topic of resource recovery for energy, and for the topic of hazardous waste management are underlined and preceded by the word "See:".

Resource Recovery -- Energy

See: Energy Sources

Pyrolysis System Evaluation Study
N 75-18722/9 way PC \$16.25/MF \$2.25

Energy Recovery from Solid Waste, Vol. 2: Technical Report
N 75-25292/4 way PC \$8.00/MF \$2.25

Synthetic Fuels from Municipal, Industrial & Agricultural Wastes
(a bibliography with abstracts)
NTIS/PS-75/655/1 way PC \$25.00/MF \$25.00

Fuel Gas Production from Solid Waste
PB-245 083/1 way PC \$6.95/MF \$25.00

See: Energy Conversion

Fuel from Organic Matter
AD-A002 204/6 way PC \$4.00/MF \$2.25

Fuel from Organic Matter: Possibilities for the State of California
AD-A002 212/9 way PC \$3.50/MF \$2.25

Energy Recovery from Solid Waste Vol. 1: Summary Report
N 75-20830/6 way PC \$4.00/MF \$2.25

Resource Recovery -- Energy (continued)

See: Reclamation

Conversion of Cellulosic Wastes to Oil
PB-240 839/1 way PC \$4.00/MF \$2.25

Waste Automotive Lubricating Oil Reuse as Fuel
PB-241 357/3 way PC \$7.75/MF \$2.25

Refuse Disposal

St. Louis/Union Electric Refuse Firing Demonstration
Air Pollution Test Report
PB-237 630/9 way PC \$5.50/MF \$2.25

Fuel Gas Production from Solid Waste
PB-238 068/1 way PC \$7.50/MF \$2.25

Fuel Gas Production from Solid Waste
PB-238 563/1 way PC \$5.00/MF \$2.25

St. Louis Refuse Processing Plant: Equipment, Facility, and
Environmental Evaluations
PB-243 634/3 way PC \$5.50/MF \$2.25

Characterizing Combustible Portions of Urban Refuse for
Potential Use as Fuel
PB-224 780/3 way PC \$4.40/MF \$2.25

Solid Waste

Where the Boilers Are. A Survey of Electric Utility Boilers with
Potential Capacity for Burning Solid Waste as Fuel
PB-239 392/4 way PC \$10.00/MF \$2.25

A Study of Federal Subsidies to Stimulate Resource Recovery
PB-239 736/2 way PC \$6.00/MF \$2.25

Financing in Solid Waste Management Design
PB-241 013/2 way PC \$4.50/MF \$2.25

Fuels from Municipal Refuse for Utilities: Technology Assessment
PB-242 413/3 way PC \$7.50/MF \$2.25

Fuel Gas Production from Solid Waste
PB-245 083/1 way PC \$6.75/MF \$2.25

Resource Recovery -- Energy (continued)

Solid Waste (continued)

Pilot Plant Development of a Fluidized Bed Incineration Process
RFP-2271 PC \$3.50/MF \$2.25

Converting Cellulosic Waste to Fuel: A Literature Review
AD-A009 400/3 way PC \$3.50/MF \$2.25

Hazardous Waste Management and Disposal

See: Hazardous Materials

Hazardous Material Waste Disposal (A Bibliography with Abstracts)
NTIS/PS-75/285/7 way PC \$25.00/MF \$25.00

Hazardous Materials Transportation (A Bibliography with Abstracts)
NTIS/PS-75/286/5 way PC \$25.00/MF \$25.00

An Appraisal of the Problem of the Handling, Transportation, and
Disposal of Toxic and Other Hazardous Materials
PB-236 599/7 way PC \$7.50/MF \$2.25

Alternatives to the Management of Hazardous Wastes at National
Disposal Sites, Volume II, Appendices
PB-237 264/7 way PC \$8.00/MF \$2.25

Control of Oil and Other Hazardous Materials
PB-238 096/2 way PC \$7.50/MF \$2.25

Promising Technologies for Treatment of Hazardous Wastes
PB-238 145/7 way PC \$4.00/MF \$2.25

Identification Systems for Selecting Chemicals or Chemical Classes
as Candidates for Evaluation
PB-238 196/0 way PC \$6.75/MF \$2.25

Industrial Solid Waste Classification Systems
PB-239 119/1 way PC \$11.00/MF \$2.25

Industry Survey of Test Methods of Potential Health Hazard
PB-239 840/2 way PC \$5.00/MF \$2.25

Proceedings of the National Conference on Pesticide Containers,
Held at New Orleans, Louisiana on 28-30 November, 1972
PB-239 918/6 way PC \$10.75/MF \$2.25

Draft Economic Impact Assessment for the Proposed Toxic Substances
Control Act (S. 776)
PB-242 826/6 way PC \$4.00/MF \$2.25

Methods to Treat, Control and Monitor Spilled Hazardous Materials
PB-243 386/0 way PC \$6.00/MF \$2.25

Hazardous Waste Management and Disposal (continued)

See: Hazardous Materials Transportation

CHRIS: A Condensed Guide to Chemical Hazards

AD-A002 390/3 way PC \$12.00/MF \$2.25

Survey Study to Select a Limited Number of Hazardous Materials to Define Amelioration Requirements, Volume I

AD-A004 311/7 way PC \$7.50/MF \$2.25

Hazardous Materials Transportation (A Bibliography with Abstracts)

NTIS/PS-75/286/5way PC \$25.00/MF \$25.00

See: Hazards

Methodology for Chemical Hazard Prediction

AD-A008 159/6 way PC \$4.50/MF \$2.25

NAVAIRSYSCOM Hazardous Material Safety Program

AD-A014 546/6 way PC \$3.50/MF \$2.25

See: Alabama

Economic Effects of Mercury Pollution on Commercial Fishing and Recreation-Related Business on Pickwick Lake in Alabama

PB-237 506/1 way PC \$5.50/MF \$2.25

See: Solid Waste Disposal

Waste Processing and Pollution in the Chemical and Petrochemical Industries--A Bibliography with Abstracts

NTIS/PS-74/118 way PC \$20.00/MF \$20.00

Textile Processing Wastes (A Bibliography with Abstracts)

NTIS/PS-75/080/2 way PC \$25.00/MF \$25.00

Hazardous Material Waste Disposal (A Bibliography with Abstracts)

NTIS/PS-75/285/7 way PC \$25.00/MF \$25.00

Water Processing and Pollution in the Chemical and Petrochemical Industries (A Bibliography with Abstracts)

NTIS/PS-75/541/3 way PC \$25.00/MF \$25.00

Textile Processing Wastes (A Bibliography with Abstracts)

NTIS/PS-75/729/4 way PC \$25.00/MF \$25.00

Alternatives to the Management of Hazardous Wastes at National Disposal Sites, Volume II. Appendices

PB-237 264/7 way PC \$8.00/MF \$2.25

Bibliographies

Hazardous Waste Management and Disposal (continued)

Organic Compounds Entering Ground Water from a Landfill
PB-237 969/1 way MF \$2.25

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Bibliographies

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More than 1,200 bibliographies have been published by this organization of librarians, faculty, professional planners, and planning organizations. Prices depend upon length and range from about \$1.00 to nearly \$10.00, with most running \$2.00 to \$3.00. The following exchange bibliographies were selected as most relevant:

#1126, Energy and Environmentally Appropriate Technologies:
A Selectively Annotated Bibliography by J. Peter Pasetzki,
1976, 22 p., \$2.00.

#832, Local Public Service Site Selection: A Bibliography by
Anthony G. White, 1975, 6 p., \$1.50.

#732, Problems, Planning, and Management of Solid Waste:
A Selected Research Bibliography, by Prakash C. Sharma,
1975, 14 p., \$1.50.

Monthly Catalogue of Government Publications
Superintendent of Documents
Government Printing Office
Washington, D.C.

This publication series is available in many large libraries. An annual index is published at the end of each year, either in the December issue or separately. Those publications which are Federal depository library items are so indicated. Reports available from NTIS are so noted. All others are for sale by the Superintendent of Documents, Government Printing Office.

As part of the current search on resource recovery and hazardous waste management, the 1975 annual index was searched, as were the November and December, 1976, monthly issues. Citations from these publications are shown below; the index category searched is underlined and preceded by the words "Subject Index Category." Subject and title indexes are also included in each monthly catalogue to facilitate finding publications one already knows about.

Bibliographies

Resource Recovery

Monthly Catalogue of Government Publications
December, 1975--Annual Index

Subject Index Category: Waste products.

Entry #14703

Energy in solid waste, citizen guide to saving, (with selected bibliography), 1975. 39 p. illustrated. Citizens Advisory Committee on Environmental Quality. Includes list of previous publications for sale by Superintendent of Documents. Paper \$1.25. Depository Item 851-J Pr 37.8:En 8/En 2/2

Entry #19062

National Aeronautics and Space Administration, NASA Contractor Report Series. #2525 Energy Recovery from Solid Waste: Vol. 1 Summary report; by C. J. Huang and Charles Dalton. April, 1975 27 p. illustrated. Prepared by University of Houston, Houston, Texas. For sale by NTIS. Paper \$3.25 NAS 1.26:2525

Monthly Catalogue of Government Publications
November, 1976

Subject Index Category: Refuse as fuel.
Recycling (Waste, etc.)

Entry #76-8890

U.S. Congress, House Committee on Government Operations Solid Waste, Materials and Energy Recovery: Twenty-fifth Report by the Committee on Government Operations, June 30, 1976, Washington, GPO, 1976. Vol. 24 p. 24; (Report--94th Congress, 2d session, House of Representatives; no. 94-1319) Includes bibliographical references. Item 1008-A, pbk. OCLC 2478420

Monthly Catalogue of Government Publications
December, 1976

Subject Index Category: Recycling (Waste etc.)

Entry #76-9914

U.S. Congress, House Committee on Interstate and Foreign Commerce Resource Conservation and Recovery Act of 1976: Report of the Committee on Interstate and Foreign Commerce, U.S. House of Representatives, on H.R. 14496. September 9, 1976--Washington, D.C. GPO, 1976. 136 p.; 24 cm--(Report-94th Congress, 2d Session, House of Representatives, no. 94-1491) Item 1008A, pbk. OCLC 2540549

Bibliographies

Resource Recovery (continued)

Subject Index Category: Hazardous substances

Entry #76-9734

U.S. National Highway Traffic Safety Administration. Hazardous Materials Emergency Action Guide. U.S. Department of Transportation, 1976. vii 87 p. 23 cm. Item 982-D-3 pbk. OCLC 2496692

Hazardous Wastes

Monthly Catalogue of Government Publications

December, 1975--Annual Index

Subject Index Category: Hazardous substances

Entry #10446

EPA, Hazardous Waste Disposal Damage Reports (with list of references) June, 1975 iv, 8 p., (EPA/530/SE-151; Current Report on Solid Waste Management) Solid Waste Management Information Materials Distribution, EPA, Cincinnati, Ohio 45268 Depository Item 431-I-7 EP 1.17:151

Entry #10447

EPA, Industrial Waste Management, seven conference papers, presented to National Conference on Management and Disposal of Residues from Treatment of Industrial Wastewaters, Washington, D.C., February, 1975. 111 p. illustrated (EPA/530/SW-156; Current Report on Solid Waste Management) Prepared by Hazardous Waste Management Division, Office of Solid Waste Management Programs. Solid Waste Management Information Materials Distribution, EPA, Cincinnati, Ohio 45268. Depository Item 431-I-7 EP 1.17:156

Entry #12030

EPA, Hazardous wastes. 24 p. illustrated. For sale by Superintendent of Documents, Paper 85¢ Depository Item 431-I-7 EP 1.17:138

Entry #13951

EPA, Landfill disposal of hazardous wastes, review of literature and known approaches (with list of references). By Timothy Fields, Jr., and Alfred W. Lindsey. June, 1975 iv + 36 p. Hazardous Waste Management Division, Office of Solid Waste Management Programs, Solid Waste Information, EPA, Cincinnati, Ohio 45268 Depository Item 431-I-7 EP 1.17:165

Entry #15219

Public Works Committee, Senate, Disposal of hazardous wastes, Report to Congress by EPA pursuant to Sec. 212 of Solid Waste Disposal Act as amended, June 1974. 81 p., 2 illustrations (Committee print, 93d Congress, 2d session) Y4.P96/10:93-21

Entry #76-9734

U. S. National Highway Traffic Safety Administration, Hazardous materials emergency action guide, U.S. Department of Transportation, 1976, vii 87 p. illustrated, 23 cm. Item 982-D-3, pbk, OCLC 2496692

Bibliographies

Periodic SB Announcement Series
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This announcement series publishes bibliographies of government reports and documents pertaining to particular subject areas on an irregular basis. One on solid waste management was published recently and is included herein. Another one which was published recently on phosphates and pesticides includes some materials relating to the subject of hazardous waste and so is also included.

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SOLID WASTE MANAGEMENT

Accounting System for Incinerator Operations. 1970. 17 p.	HE 20.1402:In 2	017-014-00001-3	\$.75
Cannery Waste Treatment by Anaerobic Lagoons and Oxidation Ditch. 1973. 110 p.il.	EP 1.23/2:73-017	055-001-00503-2	2.10
Comprehensive Study of Solid Waste Disposal in Cascade County, Mont., Final Report on a Solid Waste Demonstration. 1970. 188 p.il.	HE 20.1402:C 26	017-014-00003-0	2.80
Computer Planning for Efficient Solid Waste Collection. 1972. 24 p.	EP 1.17:5 RG. 1	055-002-00078-9	.40
Decision-Makers Guide in Solid Waste Management. 1975. 192 p.	EP 1.17:500	055-002-00145-9	3.10
Demonstration of Waste Disposal System for Livestock Wastes. 1973. 50 p.il.	EP 1.23/2:73-245	055-001-00593-8	1.15
Design Criteria for Solid Waste Management in Recreational Areas. 1972. 76 p.	EP 1.17:91 TS	055-002-00086-0	1.25
Energy in Solid Waste, A Citizen Guide to Saving. 1974. 39 p.il.	Pr 37.8:En 8/En 2/2	040-000-00319-3	1.25
Energy Recovery From Waste, Solid Waste as Supplementary Fuel in Power Plant Boilers. 1973. 24 p.il.	EP 1.17:36 D.11	055-002-00116-5	.45
EPA Legal Compilation, Solid Waste. 1972. 640 p.il.	EP 1.5/3:So 4/v.1	055-000-00066-2	4.50
Supplement to above.	EP 1.5/3:So 4/v.1/supp.2	055-000-00125-1	2.20
Evaluation of Health Hazards Associated With Solid Waste/Sewage Sludge Mixtures. 1975. 48 p.il.	EP 1.23/2:670/2-75-023	055-001-01015-0	1.10
Feasibility Study of the Disposal of Polyethylene Plastic Waste. 1971. 45 p.il.	EP 3.2:P 76	055-002-00036-3	1.10

- ___ Gaseous Emissions From Municipal Incinerators. 1974. 72 p.
EP 1.17:18 C 055-002-00124-6 \$.75
- ___ A Handbook for Initiating or Improving Commercial Refuse Collection. 1975.
68 p.il. EP 1.17:85 D 055-002-00140-8 1.40
- ___ Heuristic Routing for Solid Waste Management Collection Vehicles. 1974. 52 p.
EP 1.17:113 055-002-00120-3 1.05
- ___ Hospital Wastes. 1974. 36 p.il. EP 1.17:129-2 055-002-00134-3 .75
- ___ Improving Productivity in Solid Waste Collection, Brief for Elected Officials.
1975. 10 p.il. Pr 37.8:P 94/W 28 052-003-00081-4 .50
- ___ Improving Rural Solid Waste Practices. 1973. 83 p.il.
EP 1.17:107 055-002-00115-7 1.20
- ___ Industrial Chemicals Solid Waste Generation, Significance of Process Change,
Resource Recovery, and Improved Disposal. 1974. 142 p.il.
EP 1.23/2:670/2-74-078 055-002-00133-5 2.15
- ___ Intergovernmental Approaches to Solid Waste Management, Action Plan. 1971.
17 p. EP 3.2:In 8 055-002-00001-1 .70
- ___ A Legislative History of the Solid Waste Disposal Act, As Amended. 1974. 512 p.
Y 4.P 96/10:93-22 052-070-02577-8 4.30
- ___ Library Holding, Non-Periodical Federal Solid Waste Management Program. 1974.
116 p. EP 1.17:123 055-002-00126-2 1.80
- ___ Making Polyethylene More Disposable. 1973. 28 p.il.
EP 1.17:14 C.1 055-002-00101-7 .45
- ___ Mathematical Modeling of Solid Waste Collection Policies, Vol. 1-2. 1970.
309 p.il. HE 20.1402:M 42/v.1,2 017-014-00017-0 3.70
- ___ Method for Chemical Analysis of Water and Waste, 1971. 1971. 336 p.
EP 2.10:16020-07/71 055-001-00067-7 5.00
- ___ Mission 5000, A Citizens Solid Waste Management Project. 1972. 16 p.
EP 1.17:115 TS 055-002-00087-8 .70
- ___ Municipal-Scale Incinerator Design and Operation. 1973. 108 p.
EP 1.17:13 TS 055-002-00102-5 1.55
- ___ Ocean Disposal of Barge Delivered Liquid and Solid Waste From U.S. Coastal Cities.
1971. 119 p.il. EP 3.2:Oc 2 055-002-00035-5 1.95
- ___ Oregon's Bottle Bill, The First Six Months. *Reviews the impact of Oregon's law
requiring all beer and soft drink containers sold in Oregon to carry refund values.*
1973. 17 p. EP 1.17:109 055-002-00111-4 .35
- ___ Pharmaceutical Industry Hazardous Waste Generation, Treatment and Disposal. 1976.
192 p. EP 1.17:508 055-002-00147-5 2.55
- ___ Physical-Chemical Treatment of Municipal Wastes by Recycled Magnesium Carbonate.
1974. 128 p. EP 1.23/2:660/2-74-055 055-001-00979-8 1.90

___ Potential Solid Waste Generation and Disposal From Lime and Limestone Desulfurization Processes. 1974. 22 p.il.	I 28.27:8633	024-004-01578-1	\$.65
___ Proceedings, Public Meetings on Hazardous Waste Management, 1975. 1976. 1736 p.il.	EP 1.17:9 P/v.1-2	055-002-00150-5	14.00
___ Proceedings of 1975 Conference on Waste Reduction. 1975. 187 p.	EP 1.17:7 P	055-002-00143-2	2.40
___ Proposals for a Refuse Disposal System in Oakland County, Mich., Final Report on a Solid Waste Demonstration Grant Project. 1970. 146 p.il.	HE 20.1402:Oa 4	017-014-00005-6	2.25
___ Recovering Resources From Solid Waste Using Wet-Processing, EPA's Franklin, Ohio Demo Project. 1974. 32 p.	EP 1.17:47 D	055-002-00132-7	.65
___ Recycling Assessment and Prospects for Success. 1972. 16 p.	EP 1.17:81	055-002-00088-6	.35
___ Regional Management of Solid Wastes, A Planning Study. 1973. 12 p.	EP 1.17:80.1	055-002-00104-1	.35
___ Resource and Environmental Profile Analysis of Nine Everage Container Alternatives, Final Report. 1974. 178 p.il.	EP 1.17:91 C	055-002-00131-9	2.50
___ Resource Recovery and Waste Reduction. 1975. 95 p.	EP 1.17:161	055-002-00141-6	1.80
___ Resource Recovery Plant Implementation, Guide for Municipal Officials:			
___ Further Assistance. 1975. 30 p.	EP 1.17:157.8	055-002-00153-0	.90
___ Markets. 1976. 47 p.	EP 1.17:157.3	055-002-00152-1	1.15
___ Role of Packaging in Solid Waste Management, 1966 to 1976 (Condensation). 1972. 32 p.il.	EP 1.17:5 C.2	055-002-00057-6	.70
___ Safe and Sanitary Home Refuse Storage. Reprinted 1971. 5 p.	EP 3.2:R 25/971	055-002-00009-6	.35
___ The Salvage Industry — What It Is, How It Works. 1973. 32 p.	EP 1.17:29 C.1	055-002-00108-4	.70
___ San Diego County Demonstrates Pyrolysis of Solid Wastes to Recover Liquid Fuel, Metals and Glass. 1975. 27 p.il.	EP 1.17:SW-80 D.2	055-002-00138-6	.75
___ Sanitary Landfill, One Part Earth to Four Parts Refuse. 1970. 24 p.	EP 1.17:6	055-002-00092-4	.50
___ Scrap Tires As Artificial Reefs. 1974. 36 p.	EP 1.17:119	055-002-00123-8	.65
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___ Size Reduction of Solid Waste. 1974. 6 p.	EP 1.17:129	055-002-00125-4	.35

- ___ Solid Waste Demonstration Projects, Proceedings of a Symposium. 1972. 256 p.il.
EP 1.17:4 P 055-002-00095-9 \$2.55
- ___ Solid Waste Management, Abstracts and Excerpts From the Literature, Vol. 1-2.
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- ___ Solid Waste Management in Residential Complexes. 1972. 420 p.il.
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- ___ Solid Waste Recycling Projects, A National Directory. 1973. 284 p.
EP 1.17:45 055-000-00105-7 2.35
- ___ State Program Implementation Guide, Hazardous Waste Transportation Control. 1976.
40 p. EP 1.17:512 055-002-00146-7 .85
- ___ Study of Solid Waste Collection Systems. 1972. 32 p.
EP 1.17:9 C.1 055-002-00079-7 .65
- ___ Use of Domestic Waste Glass for Urban Paving, Summary Report. 1975. 60 p.
EP 1.23/2:670/2-75-053 055-001-01020-6 1.15
- ___ Use of Solid Waste as a Fuel by Investor-Owned Electric Utility Companies. 1975.
62 p. EP 1.17:6 P 055-002-00139-4 1.15
- ___ Waste Automotive Lubricating Oil Reuse as a Fuel. 1974. 224 p.
EP 1.23/3:600/5-74-032 055-001-00969-1 2.85
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___ Apply Pesticides Correctly, A Programmed Instruction Learning Program for Private Applicators. Rev. 1976. 178 p. il.			
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___ Crop Insurance and Information Services to Control Use of Pesticides. 1974. 96 p.	EP 1.23/3:600/5-74-018	055-001-00953-4	1.55
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___ Development of Phosphate-Free Heavy Duty Detergents. 1974. 234 p. il.	EP 1.23/2:600/2-74-003	055-001-00777-9	2.65
___ EPA Legal Compilation - Pesticides. Statutes and Legislative History, Executive Orders, Regulations, Guidelines and Reports. (Three volumes - sold in sets only.) 1973. 1164 p. il.			
EP 1.5/3:P 43/v.1-3	055-000-00069-7		11.50
___ Supplement No. 2, Volume 1. 1974. 76 p.			
EP 1.5/3:P 43/v.1/ Supp.2	055-000-00126-0		.80

—	Evaluation of Flame Emission Determination of Phosphorus in Water. 1973. 24 p.	EP 1.23/2:660/2-73-007	055-001-00661-6	\$.60
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—	The Fate of Select Pesticides in the Aquatic Environment. Contains a terrestrial-aquatic model ecosystem that can be used to assess the potential environmental impact of new pesticides before they are given a recommendation for general use. Reprinted 1976. 83 p.	EP 1.23:660/3-74-025	055-001-00995-0	2.10
—	The Federal Environmental Pesticide Control Act of 1972 - Highlights. 1973. 8 p.	EP 1.5/2:P 43	055-000-00092-1	.35
—	The Florida Phosphate Slimes Problem - A Review and a Bibliography. 1974. 48 p. il.	I 28.27:8668	024-004-01718-0	1.05
—	Geology and Phosphate Deposits of the Permian Rocks in Central Western Montana. 1973. 833 p. il., 5 pl. in pocket.	I 19.16:313-F	024-001-02201-0	3.15
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—	Investigation of a New Phosphate Removal Process. Reprinted 1973. 75 p. il.	EP 2.10:17010 DJA 11/70	055-001-00115-1	1.45
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—	Metabolism of Pesticides - An Update. 1974. 487 p. il.	I 49.15/3:184	024-010-00396-1	5.55
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211 p. EP 1.23/2:660/2-74-013 055-001-00839-2 2.40
- ___ Pesticides Abstracts. (Monthly and Annual Index.) *This publication fosters current awareness of the major worldwide literature pertaining to the effects of pesticides on humans. It represents a monthly review of more than 500 domestic and foreign journals. Subscription price: Domestic - \$18.25 a year, \$1.40 single copy, \$2.35 annual index; Foreign - \$22.85 a year, \$1.75 single copy, \$2.95 annual index. (HAPS-File Code 2M) EP 5.9:*
- ___ Pesticides in the Illinois Waters of Lake Michigan. 1974. 68 p.
EP 1.23:660/3-74-002 055-001-00954-2 1.25
- ___ Pesticides Monitoring Journal. (Quarterly.) *A new Federal journal devoted wholly to information on pesticide levels relative to man and his environment. Reports will be restricted to those dealing with data gathered from air, earth, water, food, and life, by the various monitoring programs operated by the Federal Government, States, universities, hospitals and non-government research institutions. Subscription price: Domestic - \$7.90 a year, \$2.00 single copy; Foreign - \$9.90 a year, \$2.50 single copy. (PMOJ-File Code 2Q) Pr 37.8:En 8/P 43/*
- ___ Phosphorus Derived Chemicals Segment of the Phosphate Manufacturing Point Source Category. 1974. 154 p. il.
EP 1.8/3:P 56/974 055-003-00078-5 1.90
- ___ Phosphorus Release from Lake Sediments. 1973. 185 p. il.
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71 055-001-00230-1 1.45
- ___ Protecting Honey Bees from Pesticides. Rev. 1972. 6 p. il.
A 1.35:544/3 001-000-02467-1 .35

- Safe Use of Pesticides in the Home, in the Garden. Gives advice on controlling pests in the home and garden by the proper use of pesticides. Tells how to properly store and apply pesticides safely and how to protect wildlife, fish, crops, plants, and drinking water when applying pesticides. Rev. 1972. 6 p. il.
A 1.68:589/2 001-000-02584-8 \$.35
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June, 1976

Holdings of all the EPA Regional Libraries, research laboratories, and other EPA facilities with libraries are indexed in this publication. Those books not available at a given library convenient to the potential user (such as the Region IV library in Atlanta) may be borrowed through interlibrary loan.

A search was made for books relevant to the topics of resource recovery and hazardous waste management. The following books were found. Index categories searched are underlined and preceded by the word "See:". Numerical and alphabetical codes following the book citations refer to which libraries have this book. Library code numbers are indicated in the first part of the EPA Book Catalogue; they are also listed in the Guide to EPA Libraries, included in the general reference guide materials packet.

Bibliographic Search Aids
and Services

Government Catalogs and
Index Publications

Resource Recovery -- Energy

See: Resource Recovery (nothing listed under this category)

See: Energy

Exploring Energy Choices, A Preliminary Report, Ford Foundation
Energy Policy Project, TJ 153.F6 at 3A and 5B.

Future Energies, Roy Meador, Ann Arbor Science, TJ 153.M37
at 2B, 3A, 5B.

See: Solid Waste Disposal

Resource Recovery Thru Incineration Papers, National Incinerator
Conference, Miami, Florida, 1974 AMSE (American Society of
Mechanical Engineers, Incineration Division) TD796.N37 @2B (TD
796.NA)

See: Solid Waste Management

Our Effluent Society, States and Solid Waste Management
Council of State Governments, 1974 JS 308.C6 @5A

Resource Recovery from Municipal Solid Waste
National Center for Resource Recovery, Lexington Books, 1974
TD 794.5.N37 @ 2B & 5B

See: Solid Waste Management Original

States Roles in Solid Waste Management: A Task Force Report
Council of State Governments TD 788.C68 @ 1A and 5A.

See: Solid Wastes

Recycling and Reclaiming of Municipal Solid Wastes, Frederick
R. Jackson in Pollution Technology Review No. 17, Noyes Data
Corporation, 1975. TD 794.5 J 32 @ 2B, 2B, 5A, 5B, 8A

See: Power Resources

Energy from Solid Waste, 1974, Frederick R. Jackson, Noyes Data
Corporation, TD 765.J33 @ 3B, 4B, 5A, 8A, 10B

Bibliographic Search Aids
and Services

Government Catalogs and
Index Publications

Resource Recovery -- Energy (continued)

See: Methane

Bio Gas Plant Generating Methane from Organic Wastes
Ram B. Singh, Gobar Gas Reserve Station, 1971, QD 305.H6S5, @ 5B

Bibliographic Search Aids
and Services

Government Catalogs and
Index Publications

Hazardous Waste Management and Disposal

EPA Book Catalogue

See: Hazardous Substances

Hazardous Materials Handbook, James H. Meidl, 1972, Glencoe, Illinois
@ 4D and 5B. TH9446.I 47 M44

See: Hazardous Chemicals

Hazardous Chemicals Data, National Fire Protection Association,
NFPA, @ 3A (1973), 5B (1975), 7A (1973) QD 65.N28

See: Hazardous Substances Congress

Control of Hazardous Material Spills, National Conference on Control
of Hazardous Materials Spills, 1974, AICE T55.3.H3 N3 @ 1A, 3A, 3B,
3C, 4A, 4G, 5A, 5B, 6A, 7A, 10A

Bibliographic Search Aids
and Services

Commercial Indexes

Congressional Information Service (CIS)
Index and Abstracts
7101 Wisconsin Avenue
Bethesda, Maryland 20014
301/654-1550

When they are available in a library accessible to the potential user, the CIS Index and accompanying CIS Abstracts can be quite helpful in identifying and learning briefly about legislation, Congressional reports, hearings, testimony, and other Congressional information pertinent to a given subject area.

Citations and abstracts from some of the CIS material relevant to the two topic areas being searched, resource recovery and hazardous waste management, are given below.

Resource Recovery and Hazardous Waste

House Interstate & Foreign Commerce Committee
Symposium on Resource Conservation & Recovery
April 6, 7, 1976

Transcript of Subcommittee on Transportation & Commerce
~~symposium~~ on resource conservation and recovery from
discarded materials. Focuses on problems caused by
discarded materials and on technological and financial
assistance available from private enterprise.

Session on April 7, 1976; pp. 51-76 deal with varying
views on the appropriate role and jurisdiction of States,
cities, regions, and Federal Government in resource
recovery; effects of State laws prohibiting interstate
garbage transport or disposal; nature of community options
for recovery plants; results of Wisconsin study on
feasibility and funding of regional recycling facilities.

Those testifying in this regard were:

Sheldon Albert, City Solicitor, Philadelphia, Pa.
David T. Bardin, Director, New Jersey State Environmental
Protection Agency
Sheldon Meyers, Deputy Administrator for Solid Waste, EPA
Bentley B. MacKay, Director, Louisiana Governor's Council
on Environmental Quality
Arloe Paul, Chairman, Wisconsin State Recycling Task Force
Frank Raflo, National Association of Counties

Session on April 7, 1976; pp. 78-102 deal with the nature of
the Office of Technology Assessment's (OTA) mission; des-
cription of operating demonstration projects for recycling
paper and producing fuel gas and electricity from waste pro-
ducts; diversity of recovery systems needed throughout the
U.S.; factors in private vs. public funding for various types
of recovery plants.

Those testifying in this regard were:

Robert Kaplan, Office of Technology Assessment
Harvey Yakowitz, OTA
Richard B. Scudder, President, Garden State Paper Co.
R.J. Kulperger, Environmental Systems Division, Union
Carbide Corporation
Ben McDermott, Nashville Thermal Transfer Co.
Bernard Eichholz, City Manager, Franklin, Ohio
Ronald Schwegler, Los Angeles County, Calif., Sanitation
Districts

Bibliographic Search Aids
And Services

Commercial Indexes
CIS

Resource Recovery and Hazardous Waste

(Transcript of House Subcommittee on Transportation
and Commerce, Cont'd.)

Session on April 7, 1976; pp. 103-126 deal with possible
arrangements for financing municipal recovery plants and
demonstration systems; funding differences between municipal
service facility and private corporate entrepreneur activi-
ties; function of investment bankers in facilities
construction and ownership; diverse recommendations on Federal
funding role.

Those testifying in this regard were:

Stephen G. Lewis, Director, Resource Recovery Programs,
Mitre Corporation

John Berenyi, Vice President, First National City Bank,
New York

Robert Aldrich, Vice President, White, Weld & Co.

John Kehoe, Jr., Vice President, Energy Systems Division,
Weehlabrator-Frye Inc.

Joseph Zbytniewski, Director, Business Control, Americology
Division of American Can Co.

Dorsey Lynch, Vice President of Public Finance, First
Boston Corp.

H.J. Young, Senior Vice President, Edison Electric Institute

Bibliographic Search Aids
And Services

Commercial Indexes
CIS

Resource Recovery - Energy

S721-35. Energy Research and Development and Small Business
Part 2A: Appendices, 1975.

Appendix volume to hearings on the roles of small business
and government in solar energy research and development.

Includes:

Section d: S.3714, the Family Farm Energy Conversion Act,
to encourage production of flammable gas from organic
waste; text and related FPC proceedings transcripts and
decision regarding Natural Gas Pipeline Co. (Docket No.
CP 75-147) petition to construct and operate a plant to
produce methane gas from animal wastes, together with
articles and related materials (p. 5574-5800).

Bibliographic Search Aids
And Services

Commercial Indexes
CIS

Resource Recovery and Hazardous Waste

H.R. 14496, Resource Conservation and Recovery Act of 1976
House Interstate and Foreign Commerce Committee
Subcommittee on Transportation and Commerce
June 29, 30, 1976

Hearings before the House Interstate Foreign Commerce Committee, Subcommittee on Transportation and Commerce on H.R. 14496 (text, pp. 3-96), The Resource Conservation and Recovery Act of 1976, to facilitate recovery of energy and valuable materials from solid waste by providing technical and financial assistance to State and local governments for regional waste management plants and local facilities, eliminating open dumps; and regulating treatment of hazardous wastes.

Bill establishes an EPA Office of Discarded Materials and a U.S. Resource Recovery Corporation to stimulate construction of resource recovery facilities, and requires the Commerce Department to develop specifications, markets, and information exchange for recovered materials.

H501-59.1: June 29, 1976; pp. 97-117

Witness: Sheldon Meyers, Deputy Assistant Administrator for
Solid Waste Management Programs, EPA

Statement and discussion: Objections to certain HR 14496 provisions, including Recovery Corporation establishment, adequacy of market mechanisms to finance resource recovery facilities; nature of EPA efforts to encourage resource recovery; recommended Federal and State roles in waste management.

H501-59.3: June 29, 1976; pp. 158-167.

Witness: Wesley E. Gilbertson, Wesley E., Deputy Secretary,
Pa. Dept. of Environmental Resources; representing
National Governor's Conference; accompanied by Moses
W. McCall, Chief, Land Protection Branch, Georgia
Dept. of Natural Resources; President, Association
of State and Territorial Solid Waste Management
Officials.

Statement and discussion: Complexity and extent of State involvement in solid waste management; desire for HR 14496 regulatory changes to permit flexibility.

Bibliographic Search Aids
And Services

Commercial Indexes
CIS

Resource Recovery and Hazardous Waste

H501-59.4: June 29, 1976; pp.167-172.

Witness: W. Walter Neeley, State Senator, West Virginia,
representing National Conference of State Legislatures
Statement and discussion: State need for Federal waste manage-
ment aid; recommended bill additions to aid rural areas.

Bibliographic Search Aids
and Services

Commercial Indexes

The Environment Index

Environment Information Center Inc., Publishers

124 East 39th Street

New York, New York 10016

Sales: (212) 679-0810

Customer Service and Editorial (212) 685-0845

The 1975 and 1976 editions of these annual indexes to the monthly abstract journal Environment Abstracts contained a number of citations to periodicals, government reports, and other types of documents and articles regarding both resource recovery and hazardous waste management and disposal. Abstracts of some of these articles and reports are included in the section on Abstract Journals found in a later section of this search report. Some of the citations from the 1976 edition are noted below.

Bibliographic Search Aids
and Services

Commercial Indexes
The Environment Index

Resource Recovery -- Energy

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The following citations were selected from The Environment Index 75 as examples of the types of citations obtainable from that source. The citations are followed by the Environment Information Center's accession number, which can be used to order transcripts of the original documents.

Fly Ash Pioneers a Reclamation Economy as Energy/Resource Challenges Confront Engineering Community, Professional Engineer, July, 1974, Vol. 44, no. 7, p. 18 (5 p.) 17-75-00785

Methane Gas Production as part of a Refuse Recycling System, Compost Science, Summer, 1974, Vol. 15, no. 3, p. 7 (7 p.) 17-75-01639

Perpetual Methane Recovery System, Compost Science, Summer, 1974, Vol. 15, no. 3, p. 14 (5 p.) 17-75-01640

The Flash Pyrolysis of Solid Wastes, Energy Sources, 1974, Vol. 1, no. 3, p. 295 (20 p.) 17-75-02458

State to Recycle 85% of Cities' Solid Wastes. Engineering News Record, October 17, 1974, Vol. 193, no. 17, p. 39, (2 p.) 17-75-02460

Operation Red Dog: a Study of Fluid-Bed Combustion and Potential Uses of Anthracite Culm-Bank Material, NTIS Report PB-234 512/2W, July, 1968 17-75-02464

Burning Refuse in Power Plant Promises Savings, Public Power, September-October, 1974, Vol. 32, no. 5, p. 26 (3 p.) 03-75-02872

The Solid Waste Agglomerates, Waste Age, August, 1974, Vol. 5, no. 5, p. 22 (3 p.) 17-75-13211

The Place of Incineration in Resource Recovery of Solid Waste, Combustion, October, 1974, Vol. 46, no. 4, p. 30 (9 p.) 17-75-04033

Resource Recovery Cannot be Dependent on Subsidy, Solid Wastes Management, October, 1974, Vol. 17, no. 10, p. 8 (3 p.) 17-75-04034

Bibliographic Search Aids
and Services

Commercial Indexes

Resource Recovery -- Energy (continued)

Financing Municipal Resource Recovery Systems, Waste Age,
October, 1974, Vol. 5, no. 7, p. 6 (2 p.) 17-75-04035

Resource Recovery from Municipal Refuse: an Industry Perspective,
Waste Age, October, 1974, Vol. 5, no. 7, p. 29 (2 p.) 17-75-04038

Using Solid Waste to Conserve Resources and to Create Energy,
EPA Report RED-75-326, February 27, 1975 (75 p.) 17-75-05641

Steam Generation from Refuse, and Process and Manufacturing Wastes,
Power, February, 1975, Vol. 119, no. 2, p. 21, (24 p.) 03-75-06031

Using Solid Waste to Conserve Resources and to Create Energy,
Congressional Report, RED-75-326, February 27, 1975, (75 p.)
17-75-06446

Reusing Wastes is One Answer to Cities' Trash, Energy Problems,
Commerce Today, February 3, 1975, Vol. 5, no. 9, p. 7, (4 p.)
17-75-17251

Using Waste Materials as Industrial Fuel, Plant Engineering,
May 29, 1975, Vol. 29, no. 11, p. 59, (3 p.) 03-75-07644

Resource Recovery: Challenge to Scrap Industry, Scrap Age,
February, 1975, Vol. 32, no. 2, p. 111 (35 p.) 17-75-07999

"Solid Waste Management Strategy"--an Outline for Common Sense,
Waste Age, March, 1975, Vol. 6, no. 3, p. 2 (6 p.) 17-75-08001

Recovering Resources from Solid Waste Using Wet-Processing, EPA's
Franklin, Ohio, Demonstration Project, EPA Report SW-47d, 1974,
(29 p.) 17-75-08026

Baltimore Demonstrates Gas Pyrolysis: Resource Recovery from
Solid Waste, EPA Report SW-75d.i, 1975 (28 p.) 17-75-08033

Bibliographic Search Aids
and Services

Commercial Indexes
The Environment Index

Hazardous Waste

The following citations were selected from The Environment Index 76 as examples of the types of citations obtainable from that source. The citations are followed by the Environment Information Center's accession number, which can be used to order transcripts of the original documents.

An Appraisal of the Problem of the Handling, Transportation and Disposal of Toxic and Other Hazardous Materials, NTIS Report PB-236 5999, January 30, 1970 (180 p.) 02-76-00890

Hazardous Wastes -- California's Experience, Solid Waste Management, August, 1975, Vol. 18, no. 8, p. 36 (3 p.) 17-76-02884

Disposal of Solid Toxic Wastes; Incineration of Liquid Effluents; Chemicals Recovery and Waste Disposal, Elimination of Dissolved Organics in Waste Waters; Waste Water Treatment Processing, June, 1975, p. 53 (9 p.) 19-76-02939

Disposing of Chlorinated Hydrocarbons -- Part II, Development Forum, August-September, Vol. 3, no. 6, p. 10 (2 p.) 17-76-03652

A Special Report: Management of Hazardous and Toxic Wastes, Pollution Engineering, April 1976, Vol. 8, no. 4, p. 24 (9 p.) 17-76-15961

Chemical Wastes Snafu Spurs State Planning: Part III, Solid Waste Management, July, 1976, Vol. 19, no. 7, p. 40 (2 p.), 17-76-06743

Discharge of Hazardous Wastes into Public Sewerage Systems, Deeds and Data-WPCF, April, 1976, p. 6 (4 p.) 19-76-06809

Suitability of Landfills for Disposal of Hazardous Wastes in Illinois, Waste Age, July, 1976, Vol. 7, no. 7, p. 42 (8 p.) 17-76-07503

Bibliographic Search Aids
and Services

Current Awareness Tools

Resource Recovery -- Energy and Hazardous Waste

Solid Waste Reference Service
Business Publishers, Inc.
P. O. Box 1067
Silver Spring, Maryland 20910
(301) 587-6300

This is a new current awareness tool, emerging as a result of the Resource Conservation and Recovery Act of 1976. This service is designed to inform subscribers of EPA guidelines and regulations as soon as they become known, and to notify subscribers of comment periods in ample time that they may have input into the formulation of those guidelines and regulations. Although these are two functions which government agencies themselves are directed by law to perform, this type of service has the added convenience of delivering information directly to those concerned, relieving them of the need to follow the Federal Register daily or to rely on general press coverage.

A copy of the promotional literature for this service is appended -- not as an endorsement of this particular tool, but as an example of the type of service available.

Environment Reporter
Bureau of National Affairs, Inc., Publisher
1231 25th Street, N.W.
Washington, D.C.
(202) 452-4367

This weekly publication summarizes current events across the broad spectrum of environmental affairs. Abstracts of hearings, conferences, newly issued reports, and similar documents are included. An annual index is also issued.

Notes summarizing two examples of the type of article included in this publication are given below, both of which deal with resource recovery for energy.

SOLID WASTE

reference service

A publication of BUSINESS PUBLISHERS, INC., P. O. Box 1067, Silver Spring, Md. 20910. All rights reserved. Reproduction in any form forbidden without express written permission from the publisher. Subscription rates are \$85 per year.

Publisher: Leonard A. Eiserer

Editor: Eric Easton

On October 21, 1976, the entire structure and philosophy of solid waste management changed when President Ford signed into law the new Resource Conservation and Recovery Act. Enactment of this new law represents the first regulation of solid waste management, and will have dramatic and almost immediate impact on all of our subscribers.

Business Publishers, Inc., in anticipation of this most important development, established the SOLID WASTE REFERENCE SERVICE. Now that the Act has been passed into law, our foresight can be of benefit to you. This service, the only reference service exclusively devoted to solid waste, is being offered to current subscribers at a fraction of its regular annual subscription rate.

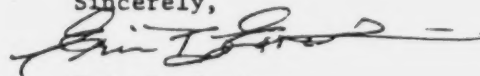
With enactment of the Resource Conservation and Recovery Act, the U. S. Environmental Protection Agency has begun developing the guidelines and regulations required by the new law. As a charter subscriber to SOLID WASTE REFERENCE SERVICE you will in the commanding position of receiving developments of these guidelines and regulations immediately. . .when they happen. More importantly, you will be able to react quickly and contribute your own concerns and ideas to the regulatory process itself -- in time to affect the regulations before they become final.

BPI'S new SOLID WASTE REFERENCE SERVICE contains the full text of the new statute and selective legislative history -- all proposed and final guidelines and regulations promulgated under the law -- and important legal decisions arising from implementation of the rules and regulations.

Subscribers to the new SOLID WASTE REFERENCE SERVICE will receive the initial documentation, bound in an attractive, vinyl-covered, easy-to-use loose-leaf binder. All new documents will be forwarded immediately upon publication throughout the subscription year, indexed and accompanied by easy filing instructions.

The SOLID WASTE REFERENCE SERVICE is offered at an annual subscription price of \$85. But because you are a valued subscriber we are offering this one-of-a-kind reference service for the charter subscription price of only \$60 per year, a savings of almost 30%. Act now and fill out the coupon on the reverse side of this letter and drop it in the mail today. Send no money; you will be billed upon receipt of the initial documentation later this year.

Sincerely,



Eric B. Easton
Editor

P.S. For your convenience we have provided a tentative table of contents for the SOLID WASTE REFERENCE SERVICE on the reverse side of this letter.

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- B. Selected Legislative History
- C. Executive and Administrative Orders
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 - 2. Storage and Collection
 - 3. Procurement of Recovered Materials
 - 4. Resource Recovery Facilities
 - 5. Source Separation
 - 6. Beverage Containers
- E. Solid Waste Management Guidelines (Section 1008)
- F. Specifications for Recovered Materials (Section 5002)
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- H. Other Guidelines and Reports

II. Hazardous Waste Management

- A. General Regulations
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 - 2. Identification and Listing (Section 3001)
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 - 2. Guidelines for State Plans (Section 4002)
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IV. Significant Legal Decisions

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Bibliographic Search Aids
and Services

Current Awareness Tools

Environment Reporter

April 23, 1976, Vol. 6, no. 52, p. 2160, "Electric Institute Says 49 Utilities Studying Use of Solid Waste as Fuel." (Notes summarizing article.)

H. J. Young, Senior Vice President of the Edison Electric Institute testified before a congressional symposium April 6-7, 1976. Types of technologies being examined include using refuse-derived fuel as a supplemental boiler fuel, purchasing waste-derived steam for power generation or district heating purposes, purchasing gas produced by pyrolysis of solid waste, and purchasing electric power from energy recovery projects operated by others. One utility was planning to own and operate its own resource recovery facility. Utilities are also looking at the use of shredded waste, incinerated raw waste, pelletized fuel, powdered fuel and pyrolysis fuel. However, Young emphasized that while utilities are willing to participate in such projects, disposing of solid waste is not their primary responsibility -- their primary responsibility is to provide reliable electric service at the lowest possible cost. "In order for utilities to consider becoming involved in resource recovery projects, the systems must be developed to ensure reliability of service, be cost competitive with other fuels, minimize capital investment risks, comply with environmental regulations, and avoid large increases in operating costs," Young said. The full potential of solid waste as fuel will not be realized until economic incentives for its use are provided. State and local governments must work with private industry, utilities and others to develop and operate projects which are both technically and economically viable, without need for artificial economics or government subsidies, he concluded.

R. J. Kulperger of Union Carbide Corporation described his company's Purox pyrolysis system, in which his company invested \$10 million over eight years to develop a 200-ton/day refuse pilot plant that produces

Bibliographic Search Aids
and Services

Current Awareness Tools

Environment Reporter (Continued)

fuel. He called for tax-exempt financing for such plants, and said there is a need for state enabling legislation to permit municipalities to enter into long-term contracts for resource recovery facilities. Resource recovery systems must be adaptable, able to alter what is recovered in case markets change, able to meet environmental considerations for the area, and able to accomodate evolving technology.

(Summaries of other witnesses' testimony are also given in this article.)

Bibliographic Search Aids
and Services

Current Awareness Tools

Environment Reporter

December 3, 1976, Vol. 7, no. 31, p. 1140. "Reclaiming Solid Wastes in Illinois." (Notes summarizing article.)

Reclaiming Illinois' household garbage could lead to the energy equivalent of 9.2 million barrels of oil, or 2.2 million tons of coal or electricity by 1980, a recycling seminar sponsored by the American Iron and Steel Institute was told December 2, 1976 in Chicago. Ronald D. Kinsey, president of Resource Technology Corporation in San Jose, California emphasized these energy recovery figures are "technologically and economically possible." Conservative estimates of the trade group are that more than 55 trillion Btus of energy will be available annually from this source by 1980, energy valued at \$1 million per million Btus. In addition, Illinois is recycling more than 4 billion steel cans annually, amounting to \$13 million of marketable steel from just the metropolitan areas. Markets for recycled steel are no problem; at least 50 percent scrap steel is currently being used in making new steel. Along with steel, \$6.3 million worth of aluminum, and \$5.4 million worth of glass will exist in the state's refuse by 1980. Along with \$55 million of energy the economics of resource recovery," Kinsey concluded, "speak for themselves."

Resource Recovery and Hazardous Waste

Environment Abstracts

Environment Information Center, Inc., Publishers
292 Madison Avenue
New York, New York 10017
(212) 949-9494

This monthly publication (bimonthly in July and August) indexes and abstracts government reports, journal articles, books, conference papers, and many other types of print and film media concerned with environmental and energy issues. An annual index is published, The Environment Index, and is discussed in the earlier section of this report, entitled "Commercial Indexes." Transcripts of most documents indexed and abstracted by Environment Abstracts can be ordered directly from Environment Information Center, either by mail or by telephone (if a "retrieval deposit account" is opened).

Sample abstracts pertaining to the topic areas of resource recovery and hazardous waste management are reprinted on the following pages as an example of the type of information readily available from this secondary source.

Sample abstracts relevant to resource recovery and hazardous waste appearing in Environment Abstracts, July-August, 1976. Category 02 -- Chemical and Biological Contamination, pp. 21-27, and Category 17 -- Solid Waste, pp. 61-63.

Reprinted by permission of Environment Information Center, Inc., Publishers.

- *76-05159 Municipal Perspectives—Resource Recovery: Possibilities and Pitfalls**, Robert J. Bartolotta, Intl City Management Assn, *Solid Wastes Management*, Nov 75, v18, n11, p52 (3) technical feature

Resource recovery projects are expensive, time consuming, risky, and complex. Municipalities should start with basic questions before approaching specifics. Organization of the many variables is the main difference between a resource recovery facility and other capital improvement projects. Economies of scale favor large cities in starting a recovery system. A major commitment to the planning phase is necessary for a successful project. Common pitfalls are also discussed. (2 diagrams)

- *76-05162 Solid Waste Disposal in Los Angeles County**, Ronald E. Schwegler, Los Angeles County Sanitation District, *Waste Age*, Jan 76, v7, n1, p14 (5) feature article

The almost 30 sanitation districts in Los Angeles County, now united under a joint management and administration program, serve the sewerage and waste disposal needs of about 4 million people. Landfill disposal facilities are a basic part of this system. A solid waste management master plan currently being developed indicates that at least 50% or 80%, depending on the feasibility of energy conversion processes, of this waste is not recoverable and must continue to be landfilled. (2 maps, 1 photo, 3 tables)

- *76-05165 The Nottingham System for Resource Recovery**, Richard Tichenor, Recycling and Conservation, Me, *Compost Science*, Jan-Feb 76, v17, n1, p20 (6) technical feature
- The Nottingham, N.H., solid waste disposal system, which is a low capital-intensive, low technology recovery system for a small town of less than 10,000 residents, is examined. The underlying concepts and mechanics of the system are described, including home separation of household waste and disposition of recycled materials. Data on household acceptance levels, proportion of recovery levels, costs, and recovery prices of the system are discussed. A Nottingham system, or some variation thereof, holds promise for many small towns that would find environmentally acceptable alternatives to be prohibitively expensive. (1 photo, 3 tables)

- *76-05170 A National Policy Toward Recycling**, James Boyd, Materials Assoc, Wash DC, *Env Science & Technology*, May 76, v10, n5, p422 (3) survey report
- Implementation of the myriad recommendations of the now-defunct Nat'l Commission on Materials Policy is happening, but at a slower pace than necessary. Recommendations for municipal solid waste recycling are reviewed. Use of industrial revenue bonds is permitted for building recycling plants. ICC is attempting to equalize freight rates. Market creation emerges as an important factor. The U.S. General Services Admin. exhibits powerful leadership; two-thirds of the paper it purchases must contain 3-100% recycled fiber, and it has removed the virgin only specification from most of its material purchases. Initiatives remaining for financing, freight rates, and marketing of recycled materials are discussed. (1 diagram, 1 graph, 2 tables)

- *76-05171 The Resource Recovery Industry**, Chris G. Ganotis, (Mitre Corp) and, Richard E. Hopper, (EPA Office Solid Waste Management), *Env Science & Technology*, May 76, v10, n5, p425 (5) survey report

Some of the resource recovery industry's thoughts and views of its present and future role, and a profile of the industry are summarized from an EPA survey. The industry is grouped into three categories: prime contractors, architect and engineering consulting firms, and equipment manufacturers. Many firms entered the resource recovery business to: expand existing product lines; promote concomitant services; and broaden raw materials or energy supply bases. The industry believes that 30-40 facilities of the 1000 ton/day size will probably be committed by 1982. The extent to which firms succeed depends on governmental policy. (2 photos, 4 tables)

- *76-05173 Treating Sewage as Resource Revives Land Disposal Interest**, *Engineering News Record*, Apr 1, 76, v196, n14, p22 (2) technical feature

Although treatment of effluent by soil filtration and adsorption has been proved technically and economically feasible in many cases, recent proposals for major land treatment systems have encountered difficulties due to EPA requirements. Land disposal system advantages include: treatment of sewage with the water reused as a resource instead of being disposed of as a waste, return of nutrients to the soil, and irrigation of grazing land and forest areas. Drawbacks involve possible change of groundwater quality, contamination of crops, by toxic elements, and multiplication of rodents and insects. (4 photos)

- *76-05176 Combustion Technology for the Disposal and Utilization of Wood Residue**, *Env Canada Report EPS 3-AP-75-4*, Oct 75 (101) special report

A state of the art review of new and emerging technology for utilizing and disposing of wood residues emphasizes air pollution potential and cost. Disposal by thermal decomposition is stressed. Only those wood residues generated at the site of a wood processing facility and only those methods of utilization that provide useful energy are considered. Three types of thermal processes for utilization or disposal systems are reviewed: combustion—complete oxidation in an excess of oxygen; conversion—gasification with or without charcoal; and degradation—pyrolysis in the absence of oxygen. The study is limited to the operations of the Pacific forest industry. (numerous diagrams, photos, tables)

Resource Recovery -- Energy

Energy Information Abstracts

Environment Information Center, Inc., Publishers
124 East 39th Street
New York, New York 10016
(212) 685-0845

This bimonthly publication indexes and abstracts government reports, journal articles, conference papers, hearings, books, and other types of print and film media pertaining to all forms of energy and all kinds of issues relating to energy. An annual index is published, Energy Index, which is discussed in the earlier portion of this report in the section entitled "Commercial Indexes." Transcripts of most articles and documents indexed and abstracted by Energy Information Abstracts are available directly from Environment Information Center, either by mail or by telephone (if a "retrieval deposit account" is opened).

Sample abstracts pertaining to the topic of resource recovery for energy are reprinted on the following pages, as an example of the type of information readily available from this secondary source.

Sample abstracts relevant to resource recovery for energy appearing in Energy Information Abstracts, January-February, 1976. Category 09 -- Unconventional Resources, pp. 30-37.

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76-20204 Fuel From Organic Matter: Possibilities for the State of California, Doris J. Dugas, Rand Corp. Calif, NTIS Report AD/A-002 212, Oct 73 (20) special report.

The sources, amounts, potential fuel value, and estimated cost of organic material that might be made available for energy in California are investigated. Sources of organic material under consideration include crops grown specifically for energy, natural forests, and wastes from urban, agricultural, and industrial sectors.

76-20208 Fuel Gas Production from Solid Waste, R. G. Kispert, et al, Dynatech R&D Co, Mass, NTIS Report PB-238 068, Jul 31, 74 (183) special report.

The development of a comprehensive computer model of a waste digestion plant is traced. Equipment, size, and processing conditions were selected for producing fuel gas at minimum cost on a scale representative of municipal waste generation, and operating and cost parameters were extensively verified and documented. A sensitivity study applied

76-20214 Animal Waste Conversion Systems Based on Thermal Discharge, L. Boersma, et al, Oregon State Univ, NTIS Report PB 240 113, Sep 74 (58) special report.

Environmental degradation resulting from pollution and the consumptive use of nonrenewable natural resources is a major problem. An animal waste management scheme devised on the premise that one solution to this problem is the development of integrated production systems with recy-

76-20217 Livestock Manure Disposal via Hydrogasification, Harold F. Rosson, Kansas Water Resources Research Inst, NTIS Report PB-239 960, Dec 74 (138) special report.

The hydrogasification of manure to produce carbonaceous material is discussed as a means of solving the water pollution potential of feedlots and providing a supplemental energy resource. The manure produces a mixture of low sulfur gases containing water, hydrogen, methane, ethane, and carbon dioxide. The yield of hydrocarbon gases in batch reactions is dependent on the reaction temperature and the hydrogen feed to carbon ratio with higher values producing higher yields. The presence of water is beneficial to the yield, with an optimum initial water content in the manure of about 50%.

76-20223 Feasibility Study of Use of Molten Salt Technology for Pyrolysis of Solid Waste, V. L. Hammond, and L. K. Mudge, Battelle-Pacific Northwest Labs, Wash, NTIS Report PB-238 674, Jan 75 (87) special report.

The pyrolysis of a typical refuse mix in molten sodium carbonate was tested on a laboratory scale. Gasification of the char that resulted from pyrolysis of solid waste was studied at different conditions using steam, air, and oxygen as the gasification agent. Evaluated were the effects of contaminants added to the molten salt during processing of municipal waste on the gasification and corrosion rates. Methods for removing ash from the molten salt system were discussed. Information obtained in laboratory studies was utilized in preparing a conceptual process and equipment flow diagram for evaluation of process economics. The processing of municipal refuse in molten sodium carbonate was found to be technically feasible but economically impractical at this time.

76-20229 Solid Waste Conversion: Cellulose Liquefaction, James A. Kaufman, and Alvin H. Weiss, Worcester Polytechnic Inst, Mass, NTIS Report PB-239 509, Feb 75 (216) special report.

The state of the art in cellulose liquefaction and its chemistry is extensively surveyed. The process concept is detailed and related to pyrolysis. Material with a heating value close to that of wood was used to make an oxygen-, nitrogen-, and sulfur-free oil having a heating value near 10,000 cal/gm. The cellulose liquefaction process is described as a continuous hydrocracking process based on technology that is readily available from the petroleum industry, although not previously applied to solid waste. The process uses a carrier oil in which the solid waste feed is slurred. Water plays an intrinsic part in the reaction for the production of hydrogen. Equilibrium calculations indicate that hydrogen is the preferable reactant gas. The effects of catalyst, temperature, pressure, and reaction time were correlated and optimized.

76-20232 Alternate Energy Sources, Edward Edelson, Edison Electric Inst B, Sep 75 (11) special report.

Over the last two decades, energy usage has increased at a rate of about 3.6%/yr, with electric power generation increasing at 6.5%/yr. The search for alternative energy sources that are inexhaustible, nonpolluting, and electrical is reviewed. The possibilities of fusion, geothermal and solar energy, and bioconversion are examined. No promising energy source, however unconventional, should be neglected by a world that is increasingly dependent on energy for its well-being. (19 references)

76-20233 Wood as a Source of Energy, Governors Task Force Report, 1975 (73) special report.

Enough surplus wood grows in Vermont forests each year to provide a significant amount of the state's energy requirements. This wood can be procured and delivered for conversion to energy at a cost competitive with other fuels. If conducted according to proper forest management procedures, substantial benefits to Vermont forest land could result from large scale wood procurement operations. The program could increase employment and business opportunities and reduce dependence on expensive imported fuels. (3 diagrams, numerous references, 3 tables)

76-20239 Resource Conservation and Recycling, Part 3, Sen Comm Commerce Hearing 93 Con 2 Serial 93-56, Jan 17-18, 74 (182)

Hearings were held on S. 2753, the Resource Conservation and Recycling Incentives Act of 1973. Considerations focus on Title 6 of the act, which provides for the development of facilities for recovery of energy from solid wastes: (1) Section 602 authorizing development of three such facilities in three years; and (2) Sections 603 and 604 authorizing grants and loans for R&D programs and activities that are likely to lead to development of a facility producing energy from waste or advances in the state of the art. Witnesses

76-20245 Waste as a Supplementary Fuel Solves Boiler Problems, Eugene C. Bailey, John Dolio & Assoc, Chicago, presented at Intl Energy Engineering Congress, Chicago, Nov 4-5, 75 (21) technical feature.

Designers, builders, and operators of incinerators burning municipal solid waste have been concerned about the wasted energy and the pollution caused by their operation, and have recognized the need for a supplementary fuel. The best results, and the most economic benefits can be achieved by separating municipal solid waste into its recyclable elements: fuels, metals, and noncombustibles other than metals. Fireside corrosion of fossil-fueled boilers and incinerators, and the combined burning of coal and prepared municipal solid waste are discussed. (2 diagrams, 10 photos, 9 references)

76-20246 Energy Reclamation from Agricultural Wastes, C. Tietjen, et al, Inst Pflanzenbau und Saatgutforschung, W. Germany, presented at Energy, Agriculture and Waste Management Conf, Cornell, 1975, p247 (238) survey report.

Energy reclamation from agricultural wastes is discussed in 16 papers: from biodeg to biogas—historical review of European experience; energy recovery and feed production from poultry wastes; anaerobic digestion in swine wastes; alternative animal waste anaerobic fermentation designs and their costs; cold weather energy recovery from anaerobic digestion of swine manure; energy and economic analysis of anaerobic digesters; dry anaerobic digestion; technologies suitable for recovery of energy from livestock manure; methane-carbon dioxide mixtures in an internal combustion engine; limitations of animal waste replacement for inorganic fertilizers; waste management systems related to land disposal utilization; utilization of plant biomass as an energy feedstock; protein and energy conservation of poultry and fractionated animal waste; protein production rates by algae using swine manure as a substrate; conservation of energy and mineral resources in wastes through pyrolysis; and thermal and physical properties of compost. (numerous diagrams, numerous graphs, 3 photos, 276 references, 60 tables)

76-20247 A Mobile Pyrolytic System—Agricultural and Forestry Waste into Clean Fuels, J. W. Tatom, et al, Georgia Tech, presented at Energy, Agriculture and Waste Management Conf, Cornell, 1975, p271 (18) survey report.

By combining agricultural and forestry wastes with high sulfur coals, acceptably low sulfur emissions can be achieved. The U.S. coal supply could thus be increased from 10-30%. Pyrolytic conversion of agricultural and forestry wastes at the Georgia Tech Engineering Experiment Station is described. The production and availability of selected agricultural and forestry wastes applicable to the pyrolytic conversion concept are surveyed. Test work on pyrolysis of cotton

76-20253 The Clean Synthetic Fuel That's Already Here, Edmund Faltermayer, Fortune, Sep 75, v92, n3, p146 (8) feature article

In the great hunt for alternative energy sources, the U.S. is largely ignoring a low polluting fuel that can be produced from abundant domestic resources with present technology. Methanol can be produced from coal, forest and farm wastes, and garbage. To produce methanol, all these materials are converted into a synthesis gas consisting of carbon monoxide and hydrogen—the same medium Btu gas that was used in homes for years before being replaced by cheaper natural gas. Methanol can be stored and transported easily and safely. It is a stable liquid at atmospheric temperature and pressure, unlike hydrogen, and is less combustible than gasoline. Almost every energy using device in the country could be adapted to burn methanol. It enables auto engines to use a lower than normal fuel to air ratio, thus achieving both energy savings and pollution reduction. (1 graph, 8 photos)

76-20258 Organic Wastes and Biomass: Perpetual Sources of Energy?, D. L. Klass, and T. L. Cramer, Inst of Gas Technology, Chicago, Pipeline & Gas J, Oct 75, v202, n12, p29 (7) technical report.

Farms designed to produce high Btu gases and liquid hydrocarbons from harvesting plants or algae, plus conversion of waste materials from farms and cities, may serve as inexhaustible, perpetually renewable sources of fuel. The use of biomass and organic wastes for SNG production would conserve fossil materials for more valuable purposes, e.g., as raw materials for the chemical industry. With the conversion of 1 ton of the 146 million ton/yr of biomass produced on the earth, as dry solids to 10,000 cu ft of methane or 1.25 bbl of crude oil, about 5% of the earth's biomass would meet U.S. energy needs. The agricultural industry could grow crops specifically for conversion to SNG efficiently enough to make the U.S. independent of foreign energy supplies. Pyrolysis, hydrogasification, anaerobic digestion, bioconversion, the Inst. of Gas Technology's biogas process, gasification of agricultural wastes, and biomass gasification are evaluated. (5 diagrams, 2 photos, 12 references, 3 tables)

76-20261 Biomass Energy, Alfred J. Johnson, Jr, Aerospace Corp, Astronautics & Aeronautics, Nov 75, v13, n11, p64 (7) survey report.

With a little planning and a reasonable amount of investment, organic wastes can be converted to fuels that would supplant about 10% of fossil fuels used today. In the long run, energy plantations might be created to replace fossil fuels altogether. Concepts of chemical energy and recycling implicit in the use of biomass fuels are explained. Key elements in biomass energy conversion are described, including photosynthetic efficiency, harvesting-collection processes, fuel conversion, energy-material feedback requirements, and the amount of resources available for use. Biomass energy is especially unique in that its development

76-20264 Energy from Municipal Refuse: a Comparison of Ten Processes, Helmut W. Schulz, Columbia Univ, *Professional Engineer*, Nov 75, v45, n11, p20 (50) survey report.

Environmental impact, reliability, and economic merit of energy recovery processes are compared. The processes include: (1) the Wheelabrator-Frye waterwall incinerator; (2) Combustion Power Co.'s incinerator turbine; (3) shredded, air-classified refuse-derived fuel; (4) chemically pulverized refuse-derived fuel; (5) wet-pulped refuse-derived fuel developed by Black-Clawson; (6) medium temperature kiln pyrolysis—the Landgard system of Monsanto Enviro-Chem; (7) low temperature flash pyrolysis developed by Occidental Research; (8) air-fed slagging pyrolysis, the Torrax system of Carborundum Co.; (9) the Purox oxygen-fed slagging pyrolysis system of Union Carbide; and (10) the Dynatech process of methane production by anaerobic digestion. The Purox system is detailed. (2 photos, 2 tables)

76-20268 Using Solid Waste as a Fuel, Gene H. Anguil, Kelley Co, Milwaukee, *Plant Engineering*, Nov 13, 75, v29, n23, p139 (2) technical report.

Pollution free incineration has the potential of converting industrial solid wastes to a heat energy resource that can reduce fuel costs, and minimize waste disposal costs. The basic design and operating principles of clean burning, pyrolytic type incinerators, and of auxiliary heat recovery equipment are discussed. (1 diagram, 1 graph, 1 photo)

76-20270 Using Solid Waste as a Fuel, Ben U. Miller, Kelley Co, Milwaukee, *Plant Engineering*, Nov 27, 75, v29, n24, p71 (3) technical report.

If all of the U.S.'s combustible solid waste materials (264 million ton/yr) were incinerated and the heat recovered, they might generate 900 trillion Btu's, or the equivalent to about 10% of the energy that the U.S. produces annually from oil. Integration of pyrolytic systems into a plant's energy supply system to utilize solid waste is described. Operation of the solid waste feeding mechanism, two stage incinerating system, flue gas to steam system, and flue gas to air system are assessed. (2 diagrams, 1 photo)

Abstracts Journals

Hazardous Waste

Sample abstracts relevant to hazardous waste management and disposal appearing in various issues of Environment Abstracts during 1976. Month of issue and accession number (used for purposes of ordering transcripts of the full document) are indicated preceding each entry.

February, 1976 02-76-00890

An Appraisal of the Problem of the Handling, Transportation and Disposal of Toxic and Other Hazardous Materials, NTIS Report PB-236 5999, January 30, 1970 (180 p.) special report. Booz-Allen and Hamilton, Washington, D.C.

"The following information is presented in narrative, tabular, and graphic form: hazardous materials classification; types and quantities of hazardous materials, accidents, involving hazardous materials, transportation, environment, and disposal of hazardous materials. The hazardous materials considered include flammable materials, compressed gases, corrosive materials, explosives, oxidizers, poisons, pesticides, and radioactive materials."

April, 1976 17-76-02884

Hazardous Wastes -- California's Experience, Solid Waste Management, August, 1975, Vol.18, no. 8, p. 36 (3 p.), technical feature. Harvey Collins, California Department of Health.

"In 1974, California's Department of Health promulgated regulations governing the essential elements of hazardous waste control, include: a hazardous waste manifest (trip ticket); a fee schedule; a procedure for notifying the department about disposal of extremely hazardous wastes; and minimum regulations. The department's experiences in administering the program are summarized." (1 graph)

May, 1976 02-76-03652

Disposing of Chlorinated Hydrocarbons -- Part 2. Stanton S. Miller, Development Forum, August-September, Vol. 3, No. 6, p. 10 (2 p.) Survey Report.

"In the Gulf of Mexico, as much as 400,000 tons/year of chlorinated hydrocarbon residues accumulate. In Europe residues range from 100,000 to 130,000 metric tons/year. A method of disposal, ocean incineration, is discussed. The two proponents of ocean incineration are Stahl and Bleck-Ban GmbH in the heavily industrialized Ruhr Valley, and Ocean Combustion Service, a subsidiary of the Hansa Line, Bremen, West Germany. In the past two years, Ocean Combustion has burned 80,000 tons of wastes from chemical manufacturing activities in Europe. The use of incineration at sea seems to be increasing."

July-August, 1976

02-76-04748--Organic Leachate Threatens Groundwater Quality, James M. Robertson, (University of Oklahoma) and Eugene C.C. Li, (Rayburn County) , Water & Sewage Works, February 1976, Vol. 123, No. 2, P. 58 (2 p.) Technical Feature.

"The potential for long-term pollution of aquifers by industrial organic chemical leached from discarded manufactured products could someday reach the threshold of natural tolerance and upset the balance of natural ecosystems. Sources and problems associated with PCB's and PAE's are summarized. Based on investigations of four wells in Oklahoma, pollution of groundwater by organic materials occurs extensively." (16 references, 1 table)

02-76-04816--Pesticide Incineration, Richard A. Carnes, and Donald A. Oberacker, EPA, Cincinnati, EPA Environment Research--Cincinnati, April 15, 1976 (4 p.) Special Report.

"Design and operational criteria for the incineration of pesticides, combustible pesticide containers, and washings from pesticide containers have been ascertained. Efforts centered on the development of combustion data for many pesticides representing various classes. An experimental pilot-scale incineration system was designed and constructed to evaluate the effect of operating variables on the efficiency of pesticide destruction. Most organic pesticides can be destroyed by incineration. A range of temperature retention time exists at which each pesticide can be more than 99.99% destroyed." (2 graphs, 1 photo)

Abstracts Journals

02-76-04817--Federal Insecticide, Fungicide, and Rodenticide Act Extension, House of Representatives, Committee on Agriculture, Hearings, 94-1, May 12-16, 1975 (548 p.), Serial 94-0, Hearing Transcript.

"Hearings were begun on legislation introduced to extend the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, for two years. Witnesses included: USDA officials from Colorado, Illinois, Louisiana, Maryland, Missouri, New York, North Carolina, Ohio, Washington, and West Virginia; representatives of farming and ranching associations; entomologists; exterminators; and public interest groups. Correspondence, a newspaper article, and relative comments and questions are transcribed."

September, 1976 02-76-05961

A Special Report: Management of Hazardous and Toxic Wastes, Paul N. Cheremisinoff, and William F. Holcomb, (EPA), Pollution Engineering, April, 1976, Vol. 8, no. 4, p. 24 (9 p.) technical feature.

"The generation rate for nonradioactive hazardous wastes is estimated at well over 10 million tons/year and is increasing. Hazardous wastes are defined, and regulations applying to their disposal are reviewed. Landfill disposal, chemical fixation, incineration, pretreatment methods, and other disposal practices for the management of hazardous and toxic wastes are discussed. EPA's position on each disposal method is described." (3 diagrams, 1 graph, 2 phot 39 references, 2 tables)

October, 1976 02-76-06743

Chemical Wastes Snafu Spurs State Planning: Part III, Bentley B. Mackay, Jr., Solid Waste Management, July, 1976, Vol. 19, no. 7, p. 40 (2 p.), feature article.

"Chemical solidification of the plant wastes and disposal by landfill was the environmentally acceptable solution worked out for disposal of E. I. DuPont De Nemours and Company's West Virginia plant wastes. But public outcry against Louisiana disposal

of these wastes by a Louisiana wastes collector company has precipitated a state-level concern for the disposal of all hazardous or toxic wastes in the state. Louisiana attracts chemical industries partly because of its lax regulation of hazardous wastes disposal."

November, 1976 02-76-07503

Suitability of Landfills for Disposal of Hazardous Wastes in Illinois, Rauf Piskin, Illinois EPA, Waste Age, July, 1976, Vol. 7, no. 7, p. 42, (8 p.), research report.

"The suitability of present permitted landfills in Illinois for disposal of the increasing quantities of hazardous wastes is explored. Criteria were developed to evaluate the ground water and other pollution potential at each site. Landfill sites may be classified according to five categories of wastes permitted, as only 31 of 283 existing landfills meet requirements for safe disposal of hazardous wastes." (2 maps, 13 references, 3 tables)

Newsletters

Solid Waste Report and Sludge
Business Publishers, Inc., Publishers
P. O. Box 1067
818 Roeder Road
Silver Spring, Maryland 20910
(301) 587-6300

These two newsletters published by this Washington-area publisher both contain brief articles regarding current developments in the areas of resource recovery and hazardous waste management. They are included here as examples of this type of information source. No endorsement is intended. This same organization publishes a large number of such newsletters concerned with a variety of topics -- including one on toxic materials, one on energy resources, and one on land use planning. Many other organizations publish similar newsletters. Some of these are listed in the general reference guide under the "Newsletters" subsection.

SOLID WASTE *report*

• Resource Recovery

• Recycling

• Collection

• Disposal

Leonard A. Eiserer
Publisher

Eric B. Easton
Editor

Bi-weekly business newsletter published from the Nation's Capital
Business Publishers, Inc., P.O. Box 1067, Blair Station, Silver Spring, Maryland
20910, (301) 587-6300. Subscription Rate: \$90 per year; \$50 for six months, U.S.,
Canada and Mexico; \$105 per year in all other countries (includes air mail postage).
Multiple copy rates on request to Henry E. Kleiner, Jr., Business Manager.

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SLANTS & TRENDS

DOUGLAS COSTLE IS EXPECTED to be named Environmental Protection Agency Administrator as soon as routine FBI checks are completed, according to Rep. Toby Moffett (D.-Conn.). Costle, 37 was Connecticut Commissioner of Environmental Protection from 1973-75, later serving as Assistant Director of the Congressional Budget Office and, most recently, as a member of President Carter's transition team cluster on government reorganization (SWR, Jan. 3, 1977, p. 1). No stranger to solid waste programs, Costle was instrumental in the creation of the Connecticut Resources Recovery Authority. He has widespread support among environmental groups and an apparently good professional relationship with industry.

BARBARA BLUM IS REPORTEDLY being considered for EPA Deputy Administrator, according to observers here. Blum was Carter's director of transition operations and, before that, a lobbyist for environmental causes. Though Blum had been thought a candidate for Chairman of the President's Council on Environmental Quality, that job will apparently go to California Assemblyman Charles Warren, who has also received environmentalists' support. While White House press aide Jody Powell told reporters Blum was not qualified for the top CEQ job, most observers would say the EPA Deputy Administrator position is far more demanding.

IN OTHER PERSONNEL NEWS, EPA Deputy Assistant Administrator for Solid Waste Programs Sheldon Meyers has selected John Skinner as Director of Office of Solid Waste's Systems Management Division. Skinner, who had been Deputy Director of OSW's Resource Recovery Division, will succeed Robert Colonna as head of SMD. OSW will also be looking for someone to replace Bob Randol who has left RRD's Technical Assistance Branch to go into investment banking. Finally, EPA Assistant Administrator Alvin Alm has moved to the White House to serve under Carter energy adviser James Schlesinger.

IF APPOINTED, AND CONFIRMED, Costle's priorities as EPA Administrator would probably include a hard look at the budget. While Office of Management and Budget Director Bert Lance has indicated Carter will accept the Ford Administration's budget request -- with exceptions for defense, housing and welfare -- that presumably remains subject to change and hardly precludes agency reprogramming.

(Continued on following page)

SLANTS & TRENDS (Cont.)

Proposed \$24.5-million-plus budget proposed for EPA solid waste management programs in fiscal 1978 has come under severe criticism (SWR, Jan. 17, 1977, p. 9), and would seem to be a good candidate for additional funds in any revision.

NATIONAL ASSOCIATION OF COUNTIES, for example, notes the \$5-million in areawide planning grants earmarked for solid waste-related planning is "scarcely enough" to cover the planning activities required by the new law. Another \$7-million or so expected to be spent for state solid waste programs from the proposed consolidated environmental grants represents a "very low budget request for state and local implementation of the new solid waste law," NACO says. And even the increase in EPA's solid waste operating budget from \$15.7- to \$24.5-million is "inadequate" to cover EPA's implementation activities.

REP. GEORGE E. BROWN, JR. (D.-Calif.), Chairman of the House Science Subcommittee on Environment and Atmosphere, was particularly critical of inadequate funding for solid waste research and development programs. "This is a classic example of how Federal laws become meaningless and new programs fail," Brown said. EPA's overall personnel cuts, combined with a research budget freeze, Brown said, "amount to Presidential sabotage of the Federal environmental program. I can only hope that the new President and the Congress will reverse this foolish action."

EVEN RUSSELL E. TRAIN, former EPA Administrator, called EPA's fiscal 1978 budget request "inadequate" and complained to Sen. Edmund S. Muskie (D.-Me.) that EPA was forced to play a "shell game" of juggling positions in order to meet requirements and responsibilities under RCRA and the Toxic Substances Control Act. In a farewell meeting with Muskie's Public Works Subcommittee on Environmental Pollution, Train said EPA needs Congressional guidance to "strengthen the hand of the agency" and suggested Congress consider passing a single "organic act" to "spell out in an integrated act what the agency is expected to do."

* * *

EPA'S IMPLEMENTATION OF RCRA, meanwhile, is progressing -- if not entirely according to plan. Advance Notices of Proposed Rulemaking, the first step in the regulatory process, had been drafted for most priority regulations and sent forward for approval. Last week, however, Office of Solid Waste received word that a single ANPRM would be published, informing the public of EPA's intent to propose rules required under the new law and providing a point of contact for comments. Detailed questions of policy and procedure, which would have been presented in individual ANPRMs, may be substantially abbreviated, eliminated altogether, or perhaps deferred until some future date.

DRAFT ANPRMS ARE CIRCULATING, however, among various interest groups which have participated in their development, and the questions they pose offer some clue to the issues with which OSW is grappling. SWR will be looking at some of these questions in forthcoming issues. On another level of implementation, EPA's Strategy Development Working Group hopes to complete major issue papers on critical aspects of RCRA in the near future, then forward them to the higher-level Strategy Review Group for final decisions sometime in April (SWR, Dec. 6, 1976, p. 193).

* * *

AS THIS ISSUE OF SWR went to press, two major business news stories were breaking. Monsanto Enviro-Chem Systems, Inc., today told the city of Baltimore, Md., it recommends terminating its EPA-sponsored demonstration of Monsanto's Landgard pyrolysis system because of "continuing mechanical unreliability and inability to predict clear cut success." And Waste Management, Inc., reported the joint venture it shares with Saudi Pritchard Ltd. has been awarded a \$243-million contract to establish and operate for five years a complete sanitation service for the city of Riyadh, Saudi Arabia. SWR will carry details on both stories next issue.

THREE TEAMS AWARDED \$100,000 TECHNICAL ASSISTANCE CONSULTING CONTRACTS

Three teams of consultants have been awarded \$100,000 contracts by Environmental Protection Agency's Office of Solid Waste to assist in delivering technical assistance to state and local governments and Federal agencies. Firms heading the teams are Development Sciences, Inc.; Peat, Marwick, Mitchell & Co.; and Urban Services Group, Inc. (USG has recently merged with Gordian Associates, Inc., to become Gordian's Washington, D.C., office. Samuel Hale will head the office as vice president, while Harvey Gershman will serve as manager, solid waste group.)

These contracts are designed to extend OSW's technical assistance capabilities, primarily in the resource recovery area, but OSW plans to add funds for assistance in other solid waste management areas as well. Contractors will be used to perform such tasks as assisting in conceptual planning for resource recovery projects, developing work plans for cities to hire their own consultants, reviewing the work of a client city's consultants, and assisting clients in developing a strategy for negotiating contracts with system vendors.

OSW emphasizes that these consultants will be used to complement, not replace, the consultants that cities and others would hire on their own. Nor are they part of the Resource Recovery and Conservation Panels required by Section 2003 of the Resource Conservation and Recovery Act, P.L. 94-580. While similar arrangements may be used in the future, OSW says, the technical assistance program under RCRA has not been finalized and these contracts will serve as a temporary means to provide assistance until the RCRA program is implemented.

Because of Federal contracting restrictions, each team has been awarded a consulting franchise for a group of states -- approximately equal in expected demand for technical assistance. Each team will have "first refusal rights" for technical assistance consulting sponsored by EPA in their respective states. Consulting teams and their franchises are:

Contract Teams and Franchise Areas

Development Sciences, Inc., management consultant; Burns and Roe, consulting engineer; Dillon Read, investment banker; and Grenberg, Traurig, Hoffmann, Lipoff, Quentel, legal counsel -- Minnesota, Utah, New Hampshire, Massachusetts, Connecticut, Rhode Island, Florida, Georgia, Alabama, Mississippi, Puerto Rico, Virgin Islands, California, Nevada, Arizona, Hawaii and Michigan.

Peat, Marwick, Mitchell & Co., management consultant; Anderson and Schoor, consulting engineer; Kraft and Hughes, legal counsel; and White Weld, investment banker -- New Jersey, Pennsylvania, Maryland, District of Columbia, Delaware, West Virginia, Virginia, North Carolina, South Carolina, Kentucky, Arkansas, Louisiana, Oklahoma, Texas, New Mexico, Washington, Oregon, Idaho and Alaska.

Urban Services Group, Inc., management consultant; Malcolm Pirnie, consulting engineer, and White Weld, investment banker -- New York, Ohio, Indiana, Illinois, Wisconsin, Minnesota, Iowa, Missouri, Kansas, Nebraska, North Dakota, South Dakota, Montana, Wyoming, Colorado, Utah, Tennessee.

OSW's new program is set up in such a way as to permit the project officer, Bob Lowe, to approve initial site visits by consultants to prospective technical assistance clients. Subsequent work must be initiated by EPA's Contracts Management Division. Clients will be selected from among those which request EPA-sponsored services, where the chance for a successful project is high (as evidenced by support of elected officials and an urgent need for action), and where EPA support will have an impact.

Regional officials are being advised to screen prospective clients for these criteria and ask those who appear qualified to send headquarters a letter, signed by an elected official, stating as specifically as possible what assistance is requested. Because the size of these contracts and the program itself is still relatively small, EPA notes, it is inappropriate to encourage a large number of communities to request assistance. Decision to assist prospective clients will be made on the basis of priorities assigned by EPA regional representatives and the selection criteria outlined above.

EPA COMPLETES SCHEDULE FOR REGIONAL MEETINGS ON P.L. 94-580 IMPLEMENTATION

Final schedule for regional meetings on implementation of the Resource Conservation and Recovery Act of 1976, P.L. 94-580, has been established by Environmental Protection Agency and will appear soon in the *Federal Register* (SWR, Jan. 17, 1977, p. 10). As reported earlier, the following sessions are designed to permit the involvement of the general public and representatives of environmental, industrial, governmental and other organizations who will be affected by the new law:

Region I: Feb. 25, 1:00 pm, Sheraton Lincoln Inn, Lincoln St., Worcester Mass. Also, Feb. 26, 1:00 pm, Holiday Inn, 172 N. Main St., Concord, N.H. Contact: Dennis Huebner, (617) 223-5775.

Region II: Feb. 23, 4:00 pm, Americana City Squire Hotel, 52nd St. & 7th Ave., New York, N.Y. Contact: Michael Debonis, (212) 264-0503.

Region III: Feb. 17, 7:00 pm, Feb. 18, 9:00 am, The Colony House-Executive Motor Inn, Richmond, Va. Contact: Charles Howard, (215) 597-0982.

Region IV: Feb. 23, 7:00 pm, Feb. 24, 8:30 pm, Sheraton Biltmore Hotel, 817 W. Peachtree St., N.E., Atlanta, Ga. Contact: James Scarbrough, (404) 881-3116.

Region V: March 21, 7:00 pm, March 22, 9:00 am, Holiday Inn O'Hare/Kennedy Expressway, Chicago, Ill. Contact: Jay Goldstein, (312) 353-2197.

Region VI: March 8, 7:00 pm, March 9, 9:00 am, First International Bldg., 29th Floor, 1201 Elm St., Dallas, Tex. Contact: Herbert Crowe, (214) 749-7601.

Region VII: Feb. 15, 7:00 pm, Feb. 16, 9:00 am, Hilton Inn Plaza, 45th & Main Sts., Kansas City, Mo. Contact: Morris Tucker, (816) 374-3307.

Region VIII: March 3, 8:30 am, Main Library, 1357 Broadway, Denver, Colo. Also, March 4, 8:30 am, Hilton Hotel, 150 West South 5th St., Salt Lake City, Utah. Contact: Jon Yeagley, (303) 837-2221.

Region IX: March 10, 7:00 pm, March 11, 8:00 am, Holiday Inn Union Square, 480 Sutter St., San Francisco, Calif. Contact: Charles Bourns, (415) 556-4606.

Region X: March 17, 7:00 pm, March 18, 8:30 am, Seattle Center, Seattle, Wash. Contact: Tobias Hegdahl, (206) 442-1260.

Resource conservation provisions of P.L. 94-580 will also be discussed at a public meeting March 6 in Washington, D.C., sponsored by the Waste Reduction Branch, Resource Recovery Division of EPA's Office of Solid Waste. Coinciding with a conference of the National Coalition on Solid Waste, sponsored by Environmental Action Foundation, March 4-6, the meeting will be another part of the public participation efforts of OSW, and the emphasis will be on discussion, rather than formal presentations.

General areas to be discussed will include: role of state and local governments in resource conservation; focus of the Resource Conservation Committee; role of the Resource Recovery and Conservation Panels in resource conservation; and the need for and nature of resource conservation guidelines. Further information is available from Bill Ades or Harry Butler, (202) 755-9145.

* * *

DOI REPORT EVALUATES WASTE-STORAGE POTENTIAL OF ATLANTIC COASTAL PLAIN

Some subsurface environments in the Atlantic Coastal Plain from North Carolina through New Jersey may have the geologic potential for storage of toxic wastes, according to a new report from Department of Interior, U.S. Geological Survey. The result of a two-year investigation to evaluate the waste-storage potential of selected segments of the Mesozoic rocks in that part of the plain, the report does not locate specific potential subsurface storage sites, but rather presents geologic criteria that could be used in site identification.

Environments described consist of layers of sand or sandstone, 20 feet or more in thickness, that are immediately overlain and underlain by layers of shale or clay, 20 feet or more in thickness, and which occur in Mesozoic rock units lying at a depth equal to or greater than 1,500 feet below sea level. While the depth of burial, physical character, and extend and thickness of these potential waste reservoirs are variable, report says, the range in variability appears broad enough to satisfy the geologic requirements for different types of waste storage. USGS Professional Paper 881 is available @ \$11 from Distribution Branch, USGS, 1200 S. Eads St., Arlington, Va. 22202.

NSWMA SEEKS MORE TIME TO RETROFIT UNSTABLE, SLANT-SIDED REFUSE BINS

Arguing that unstable, slant-sided refuse bins simply cannot be replaced or retrofitted within the nine-month period proposed by Consumer Product Safety Commission, National Solid Wastes Management Association last week urged CPSC to adopt an extended timetable developed by American National Standards Institute to alleviate the most serious problems first (SWR, Jan. 17, 1977, p. 10). Testifying before the commission today, NSWMA's Eugene Wingerter told CPSC its "unreasonable demand to do the impossible will result in widespread noncompliance or an untenable financial burden for those who attempt to meet an unmeetable schedule..."

Wingerter said the total number of affected refuse bins is unknown, as is their geographic distribution, though NSWMA estimates approximately 500,000 to 750,000 containers may be involved. Wingerter estimated the cost of retrofitting each container at from \$40 to \$100, compared to the \$250 to \$750 purchase price of a new unit, and suggested that 2,000 to 4,000 retrofits per day would be required to complete the program in nine months.

Aside from the economic hardship this would impose on the small businesses which comprise the solid waste collection industry -- assuming the work could even be done -- Wingerter said the requirement could result in serious environmental and economic consequences to the public with possible interruptions in collection services.

Further complicating the problem, Wingerter noted, is the fact that NSWMA represents only 1,500 of the estimated 10,000 refuse collection firms in the country. Communicating with 8,500 non-member firms would be exceedingly difficult, he said, suggesting that if the commission adopts the proposed nine-month compliance schedule, thousands of small businesses would find themselves in violation. Many would be unaware of the ban, Wingerter said; many will be unable to make the needed investment in so short a time, and many will not have access to the necessary engineering and welding capacity.

BFI's Barineau Offers Concrete Example

To focus the problem more clearly, Browning-Ferris Industries' John Barineau posed a hypothetical 10-truck collection firm servicing 2,000 slant-sided containers. Replacement of all units, at \$400,000, would not be financially feasible for such a company, he said, and retrofit, at \$46 to \$74 per unit, would cost between \$90,000 and \$150,000. Compressed into a nine-month period, Barineau said, this expenditure could seriously damage the financial integrity of many smaller companies and set off a wave of emergency price increases.

Cost considerations aside, Barineau pointed out that a typical three-man container maintenance shop could retrofit only about 18 containers a week -- assuming half the shop's capacity were devoted to the retrofit program -- requiring more than two years to complete 2,000 retrofits. Even if the shop worked exclusively on retrofit, 54 weeks would be needed. All of this assumes that no changes would be needed in trucks which service the containers and that such 10-truck firms are equipped with adequate container maintenance facilities and equipment -- both optimistic assumptions.

Notwithstanding these arguments, most of the commissioners seemed disturbed that neither Wingerter, nor Barineau, nor SCA Services' Warren Gregory were able to say with certainty how many containers would have to be retrofitted. Without such hard data -- which they appeared to expect the industry to supply -- the commissioners left the impression they would hesitate to amend the proposed nine-month compliance schedule which CPSC staff considered "reasonable." Nor did the commissioners appear to embrace the ANSI timetable, which calls for completion of the retrofit program for other than bins located near schools from three to 15 months beyond the commission's proposed Dec. 15, 1977, deadline.

Only one commissioner, Barbara Hackman Franklin, opposed the procedure by which CPSC would ban refuse bins which do not comply with proposed safety standards after nine months. According to Franklin, this procedure (under Section 8 of the Consumer Product Safety Act) is vulnerable to litigation which could delay or negate a safety standard for new refuse bins (under Section 7) and could set an unwise legal precedent. Neither the commission staff, nor any other outside witnesses, testified.

NATIONAL MANDATORY DEPOSIT LEGISLATION REINTRODUCED BY HATFIELD, JEFFORDS

Legislation requiring a minimum 5¢ deposit on all beer and soft drink containers sold in the nation has been reintroduced by Sen. Mark Hatfield (R.-Ore.) and James Jeffords (R.-Vt.). Hatfield's S.276, introduced Jan. 18, would phase in the deposit over a three-year period and ban so-called "flip-top" opening devices one year after enactment (SWR, July 5, 1976, p. 105).

Inserting more than 50-pages of background documentation into the *Congressional Record*, Hatfield cited recent "bottle bill" victories in Michigan and Maine as evidence that the "returnable beverage container issue is... still very much alive." Hatfield urged his colleagues to "give this matter additional thought in the coming months" and, after hearings and further discussion, "take a strong position on the need to reduce our wasteful discard of precious natural resources."

In a related development, Rep. Bob Eckhardt (D.-Tex.) has reintroduced legislation to prohibit excessive packaging of consumer products. Supported by several public interest groups, spearheaded by a student coalition known as UNWRAP, Eckhardt's bill would be considered by his own House Commerce Subcommittee on Consumer Protection and Finance.

* * *

NSWMA URGES RETENTION OF INDEPENDENT SENATE SMALL BUSINESS COMMITTEE

Abolition of the Senate Small Business Committee, proposed as part of an overall Senate reorganization scheme, has been opposed by National Solid Wastes Management Association. In a letter to key Senators, NSWMA's Eugene Wingerter said, "It is vital to the future health of the nation's small businesses that their voice on Capitol Hill not be subordinated to that of their big business competitors or to the large financial interests with which they deal."

Under Senate Resolution 4, as proposed, jurisdiction over small business affairs would be consolidated in the Senate Agriculture Committee. Senate Rules Committee, to which the resolution was referred for hearings, has recommended against that consolidation, and floor debate is scheduled to begin today.

According to Wingerter, the private solid waste management industry has "long been dominated by the small, independent businessman. Lumping small business jurisdiction with that of farm legislation would inevitably find the interests of non-agricultural small businessmen given a back seat."

* * *

RUBBER RECLAIMERS ASSOCIATION BECOMES NEW NARI COMMODITY DIVISION

Companies which account for approximately 85% of the nation's recycled rubber production, formerly organized as the Rubber Reclaimers Association, have affiliated with the National Association of Recycling Industries as a new NARI commodity division. According to NARI's M.J. Mighdoll, "The affiliation of these members of the Rubber Reclaimers Association is fully consistent with NARI's objectives in providing representation, services and leadership for the recycling industry in its various commodity and operational sectors."

Initial group includes Atlos Rubber, Inc., Los Angeles; Centrex Corp., Findlay, Ohio; Goodyear Tire & Rubber Co., Akron; A. Lakin & Sons, Inc., Chicago; Midwest Rubber Reclaiming Co., East St. Louis, Ill.; Nearpara Rubber Co., Trenton; Ohio Rubber Co., Willoughby, Ohio; Uniroyal, Inc., Mishawaka, Ind.; and U.S. Rubber Reclaiming Co., Vicksburg, Miss. Organizational meeting will be held Feb. 9.

* * *

FEDERAL HIGHWAY ADMINISTRATION is seeking a contractor to determine the potential for combining fly ash with coal refuse, and to evaluate the usefulness of various combinations of fly ash, coal refuse and other additives (lime, bitumen, cement, etc.), as highway base course mixtures. Copies of RFP 205-7 may be requested before March 11 from Department of Transportation, Federal Highway Administration, Office of Contracts and Procurement, Washington, D.C. 20590. RFP is due March 31, 1977.

AROUND THE STATES

FLORIDA -- Gov. Reubin Askew will attend groundbreaking ceremonies Feb. 2 for construction of Energy Research and Development Administration's \$2.8-million experimental anaerobic digestion/methane recovery facility at Pompano Beach. Facility is being constructed for ERDA by Waste Management, Inc., and is designed to convert 50 to 100 tons of solid waste and sewage sludge per day into pipeline-quality methane gas.

GEORGIA -- State Department of Natural Resources, Environmental Protection Division, has established a free information service through which interested parties may offer to buy or sell waste materials, energy sources and used stationary waste processing equipment. Complete description of material or service available or wanted -- including quantity, composition, form (liquid, sludge, solid), storage and origin by county -- should be directed to Georgia Waste Exchange, Room 804, 270 Washington St., S.W., Atlanta, Ga. 30334.

ILLINOIS -- National Solid Wastes Management Association this month endorsed proposed state regulations governing liquid and hazardous waste hauling, now undergoing public hearings. In a letter to Illinois Environmental Protection Agency, NSWMA urged consistency of the state hazardous waste management program with applicable provisions of the Federal Resource Conservation and Recovery Act "to provide an opportunity for interim and final authorization of the state's on-going regulatory activities."

IOWA -- State Department of Environmental Quality has proposed legislation requiring public or private agencies which dispose of solid waste on land owned or leased by them to obtain waste disposal permits. Elimination of the current exemption, given top priority by DEQ, is considered to be the minimum change necessary to allow state enforcement of new Federal regulations under the Resource Conservation and Recovery Act.

KENTUCKY -- Norman E. Schell has been appointed Director, Solid Waste Division, Kentucky Department for Natural Resources and Environmental Protection, effective Jan. 16, and will later assume the directorship of a reorganized division dealing with hazardous spills, toxic substances and all aspects of municipal and industrial waste management (SWR, Jan. 3, 1977, p. 7). Division is currently surveying industries in the state, assisted by U.S. Environmental Protection Agency funding, to determine where hazardous wastes are being generated and where they are being disposed.

MASSACHUSETTS -- Plainville Zoning Board of Appeals has granted a variance to Clean Communities Corp., Peabody, clearing the way for construction of a \$70-million resource recovery complex. First phase of the project, shredding and magnetic separation, should be in operation by spring, with the entire complex in operation in about three and a half years.

NEW JERSEY -- Dr. Edward J. Jablonowski has been named Administrator, Middlesex County Department of Solid Waste Management Programs, succeeding Theodore F. O'Neill who is returning to graduate school on a full time basis. Jablonowski's appointment leaves vacant the position of Resource Recovery Program Manager within the department.

NEW YORK -- New York City Environmental Protection Administrator Robert A. Low has endorsed the proposed separation of the city Department of Sanitation from his own EPA organization. Low called the creation of "superagencies" such as EPA a mistake, pointing out that the Department of Sanitation needs the full-time attention of a commissioner with immediate access and accountability to the Mayor. Low told the City Council Committee on Charter and Government Operations, however, that redeployment of fiscal and administrative support services should be delayed for one year after creating autonomous sanitation and environmental protection departments.

TENNESSEE -- Federal grand jury in Knoxville this month indicted Knox County Commissioner John M. Beeler on charges of extorting \$82,500 over a 33-month period from Browning-Ferris Industries' BFI-Knoxville unit. Maximum penalty upon conviction on each count is 20 years in prison and a \$20,000 fine.

COMING UP -- CALENDAR OF SOLID WASTE MANAGEMENT MEETINGS

Feb. 15-16: Handling & Disposal of Hazardous & Toxic Wastes Workshop, Saddlebrook, N.J. Contact: Remus Klimaski, Dir. of Continuing Education, New Jersey Institute of Technology, 323 High St., Newark, N.J. 07102, (201) 645-5235.

Feb. 23-25: Economic Growth with Environmental Quality Conference, Washington, D.C. Contact: John Adams, Environmental Industry Council, 1825 K St., N.W., Suite 210, Washington, D.C. 20006, (202) 331-7706.

March 2-3: Bioconversion Conference, Kansas City, Mo. Contact: Walter Benson or Mary Louise Lillis, Midwest Research Institute, 425 Volker Blvd., Kansas City, Mo. 64110, (816) 753-7600.

March 8-9: Street Cleaning & Maintenance Management Workshop, Philadelphia, Pa. Contact: American Public Works Assn., Education Foundation, 1313 E. 60th St., Chicago, Ill. 60637, (312) 947-2534.

March 10-11: Street Cleaning & Maintenance Management Workshop, Kansas City, Mo. Contact: American Public Works Assn., Education Foundation, 1313 E. 60th St., Chicago, Ill. 60637, (312) 947-2534.

March 10-15: National Association of Recycling Industries Annual Convention, Miami, Fla. Contact: NARI, 330 Madison Ave., New York, N.Y. 10017.

March 14-16: Management of Gas and Leachate in Landfills, St. Louis, Mo. Contact: Engineering Extension, College of Engineering, 1020 Engineering Bldg., University of Missouri-Columbia, Columbia, Mo. 65201.

March 16-17: Regional View of Resource Recovery: Incentives and Options Seminar, Atlanta, Ga. Contact: Beverly Hart, Atlanta Regional Solid Waste Task Force, 3405 Northlake Trail, Atlanta, Ga. 30340.

April 25-26: Western Solid Waste Symposium, Governmental Refuse Collection and Disposal Association. Contact: Robert Lawrence, City of San Leandro, 835 E. 14th St., San Leandro, Calif. 95112.

April 27-29: Food, Fertilizer & Agricultural Residues Conference, Syracuse, N.Y. Contact: Waste Management Conf., Cornell Univ., 207 Riley-Robb Hall, Ithaca, N.Y. 14853.

May 10-12: 32nd Annual Purdue Industrial Waste Conference, West Lafayette, Ind. Contact: A.J. Steffen, Rm. 310, Civil Engineering Bldg., Purdue Univ., West Lafayette, Ind. 47907, (317) 749-2078.

May 12: Small Business Program, Chicago, Ill. Contact: National Association of Recycling Industries, Inc., 330 Madison Ave., New York, N.Y. 10017, (212) 867-7330.

May 29-June 1: 24th Ontario Industrial Waste Conference, Toronto, Ontario, Canada. Contact: M.F. Cheetham, Conf. Coord., 135 W. St. Clair Ave., Suite 100, Toronto, Ontario, Canada M4V 1P5.

June 24-25: Advanced Plant Supervisors Workshop, Chicago, Ill. Contact: National Association of Recycling Industries, Inc., 330 Madison Ave., New York, N.Y. 10017, (212) 867-7330.

Aug. 8-9: Mid-Atlantic Industrial Waste Conference, Lewisburg, Pa. Contact: William Snyder, Chemical Engineering Dept., Bucknell Univ., Lewisburg, Pa. 17837.

SOLID WASTE GRANTS & CONTRACTS

Environmental Protection Agency has awarded South Carolina Department of Health, Columbia, \$76,000 for solid waste planning;

Montana Department of Health and Environmental Sciences, Helena, \$50,000 to study the effect of particle size on landfilled solid waste;

Princeton University, Princeton, N.J., \$85,585 to study the effects of diverse parameters on steam pyrolysis of agricultural residues in a laboratory bench-size reactor;

University of Waterloo, Ontario, Canada \$23,600 to prepare an economic assessment of an acid extraction method for recovering metals and phosphates from municipal sewage sludge;

Geological Resources, Inc., Raleigh, N.C., \$30,976 to develop a system for evaluating groundwater contamination from waste disposal sources.

END



SLUDGE

★ GENERATION
★ TREATMENT
★ UTILIZATION
★ DISPOSAL

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SLANTS & TRENDS

TEN-YEAR, \$45-BILLION PROGRAM for sewage treatment plant construction, proposed this month by the Ford Administration, should insure continuing growth in the generation of wastewater treatment plant sludge. Fiscal 1978 budget proposal, sent to Congress on Jan. 17, also includes a \$400-million supplemental appropriation in fiscal 1977 for construction grants to states which will use up their share of the \$18-billion presently authorized before the newly proposed funds become available in fiscal 1978. Other construction funds could come from public works/jobs bills now pending in Congress.

FUNDS FOR SLUDGE MANAGEMENT, while not specifically identified, are included not only in the construction grants program, but in various other Environmental Protection Agency budget accounts. EPA's solid waste program, for example, which has primary sludge management responsibilities under the Resource Conservation and Recovery Act, would be authorized \$24.5-million for all activities -- an increase of \$8.8-million and 30 positions over fiscal 1977 levels. Another \$5-million is included in the water quality management planning grant program for sludge and solid waste-related activities.

STATE POLLUTION CONTROL EFFORTS would no longer be funded by categorical grants, under the new budget proposal, but rather by a single consolidated grant program with budget authority totaling \$135.4-million. These funds would be distributed at the state's discretion, though EPA will continue to establish criteria for state and local pollution control programs and to review plans for approval before Federal funds can be provided. Thus, states could devote more or less attention to sludge depending on the relative magnitude of the problem.

INCOMING CARTER ADMINISTRATION is expected to submit its own budget proposal in a month or so, and the final word, of course, rests with Congress through the appropriations process. In addition to funding, the new 95th Congress will again consider Clean Air and Federal Water Pollution Control Act amendments which could have an effect on sludge generation and management. Technical amendments to the Resource Conservation and Recovery Act may also be considered by the 95th Congress, and Rep. Robert Drinan (D.-Mass.) has reintroduced his comprehensive Sludge Management Act, this time as H.R.851 (SLUDGE, November 1976, p. 57).

Publisher: Leonard A. Eiserer

Editor: Eric B. Easton

Editorial & Business Office: P.O. Box 1067, 818 Roeder Road, Silver Spring, MD 20910, (301) 587-6300

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CAMDEN AWARDED \$1.3-MILLION SLUDGE COMPOSTING GRANT, MOVES OCEAN DUMPSITE

Camden, N.J., has been awarded a \$1,289,913 grant from U.S. Environmental Protection Agency to help build a facility to compost the sewage sludge it now dumps into the Atlantic Ocean under a 90-day emergency permit issued Dec. 13 (SLUDGE, December 1976, p. 67). Camden has also agreed in U.S. District Court to move its dumpsite from 35 miles off Ocean City, Md., to about 100 miles off Cape May, N.J., as requested by EPA and the state of Maryland.

Camden will use the EPA funds (Grant No. C340678-01-0), plus about \$500,000 in local funds for a "pilot study" to evaluate the composting method developed by U.S. Department of Agriculture's Beltsville, Md., research station for sludge stabilization and disposal on land. EPA officials expect Camden to have the facility operational by the time its emergency dumping permit expires in March, though there have been indications Camden may seek renewal. Camden has been dumping about 1.3-million gallons of sludge monthly and expects to dump about 5-million gallons during the permit period.

Camden agreed to move the dumpsite, which could cost the city about \$30,000 after Food and Drug Administration's Capt. James L. Verber told the court that the threat of viral, bacterial and heavy metal contamination from Camden's untreated sludge prompted FDA to close the area off Ocean City to shellfish harvesting. While Philadelphia dumps about 10 times more sludge than Camden in the same site, Camden's untreated sludge is far more toxic. Nevertheless, Maryland is expected to ask EPA to force Philadelphia to dump its sludge at the Cape May site, currently used by New Jersey for chemical wastes.

In a related development, EPA this month published its final revision of ocean dumping regulations and criteria (SLUDGE, November 1976, p. 60). According to National Wildlife Federation, the final regulations represent a "considerable improvement" over EPA's proposal, but the environmental group may return to court to seek correction of continuing deficiencies. Noting that EPA "addressed many of our concerns... some satisfactorily, some not so satisfactorily," NWF's Ken Kamlet told SLUDGE a decision will be made shortly on whether to pursue the litigation further.

Limits Interim Permits, Amends Criteria

In keeping with EPA's intent to "eliminate ocean dumping of unacceptable materials as rapidly as possible," revised regulations provide that "interim ocean dumping permits will be issued after April 23, 1978, only to interim permit holders who have exercised best efforts to meet the requirements of a special permit by that date and have implementation schedules adequate to allow phasing out of ocean dumping or compliance with the requirements of a special permit by Dec. 31, 1981." Deadlines now apply to both industrial and municipal dumpers, and EPA will not retain discretion to issue interim permits to applicants who do not meet these requirements.

With respect to criteria for evaluating permit applications, EPA has now based all criteria on ecosystem impact rather than assumptions regarding allowable deviations from normal ambient values. In particular, EPA says, "the use of bioassay results for regulatory purposes will provide EPA with direct measurements of the impact of dumping materials, so that it will no longer be necessary to infer damage indirectly through measurements related to normal ambient values."

This emphasis on bioassay results, especially in determining so-called "trace contaminants," represents a "great deal of movement in the right direction," according to NWF's Kamlet. But Kamlet questions the degree of reliance on bioassay, to the exclusion of other approaches, citing useful information available from chemical testing. Bioassay is "useful," Kamlet said, "but it can't tell you everything," and NWF will likely propose a minimum list of chemical substances which must be tested for.

Other objections NWF will probably raise concern continuing distinctions between dredge materials and other wastes, such as sewage sludge. While EPA has acknowledged a "principle" of similarity and imposed many of the same requirements of dredged materials as previously imposed on other wastes, Kamlet said there remain "inexplicable and impermissible" exemptions for dredged materials. NWF is not entirely satisfied with EPA efforts to conform to "burden of proof" requirements of the law, and will probably press for more emphasis on adverse impacts on marine ecosystems. Regulations appear in the Jan. 11 *Federal Register*.

OSW'S MEYERS PLEDGES COORDINATED SLUDGE MANAGEMENT PROGRAM

Notwithstanding the broad authority over sludge management programs recently granted Environmental Protection Agency's Office of Solid Waste, "all the on-going sludge work -- in EPA, other agencies, and the research community -- will form the cornerstone of EPA's sludge policy and programs," OSW's Sheldon Meyers said last month. Addressing the Third National Conference on Sludge Management, Disposal and Utilization in Miami, Fla., Meyers outlined the authorities given OSW under the Resource Conservation and Recovery Act and, internally, through the Residual Sludge Working Group.

"If we are to manage sludge in an effective and environmentally sound manner," Meyers noted, however, "we must rely on and coordinate with those who have been actively working in the field over the past several years. Having the authority to handle a problem is only part of the equation," he said. "Working cooperatively with all of those concerned will yield the only viable solution."

From EPA's perspective, Meyers said, insuring environmentally acceptable sludge management is not only a responsibility, but also a challenge. "As we move forward in our efforts to clean up the air and water, we generate increasing quantities of sludge. Utilizing and/or disposing of this sludge in a manner that does not significantly degrade the environment is clearly a major responsibility of this agency," he said, suggesting that the new Resource Conservation and Recovery Act, P.L. 94-580, "helps us to define this responsibility better by clarifying our authority over the land disposition of sludge" (SLUDGE, October 1976, p. 50).

As the sludge disposal problem grows, both in size and in scope, Meyers said, the development of a unified and well-coordinated EPA policy on sludge management becomes more critical. "Developing such a policy, and coordinating the many diverse program activities that will support it, are definite challenges," he said. "EPA's Residual Sludge Working Group, composed of affected offices within the agency with an interest in sludge management, is striving to meet these challenges by integrating all policy planning and guidance work across program and office lines."

* * *

EPA REVIEWS POTENTIAL IMPACT OF SLUDGE SPREADING ON GROUNDWATER

Although the potential clearly exists for groundwater contamination from land spreading municipal and industrial sludge, the actual impact has never been documented, according to U.S. Environmental Protection Agency. In a new "Report to Congress on Waste Disposal Practices and Their Effects on Ground Water," EPA notes that less than 1% of present municipal sludge disposal facilities and even fewer industrial sludge spreading sites are monitored for their effects on water quality.

In the U.S., EPA says, municipal sludge production amounts to about 5-million dry tons per year. Accurate data on quantities of industrial sludge are not available; however, the total volume certainly exceeds municipal sludge production many times over. Organic and inorganic chemicals industries and coal-fired utilities are the largest contributors of residues, accounting for more than half the total production. Industrial expansion and growing pollution control activities should increase the volume of industrial sludges dramatically over the next 10 years.

Most municipal and industrial sludge is now disposed of in landfills and impoundments, report says. As controls over these two methods of disposal become more restrictive with respect to the type of waste accepted, however, the amount of sludge diverted to land-spreading sites will increase rapidly. This, in turn, threatens groundwater as organisms and chemical ions and compounds are leached by precipitation and carried in percolate to ground water.

Report says the key to correct management combines site selection with sludge composition, application rates, and land use. Of major importance to groundwater is the availability of soil, such as a loam or silt loam, which is most efficient for attenuating contaminants. Formal regulations governing land application of wastewater sludges exist in 21 of the 54 states and territories. In most other areas, EPA says, land spreading can only be regulated insofar as the state shows pollution of surface or groundwater will result from sludge disposal.

Copies of the report are available from EPA, Office of Water Supply, 401 M St., S.W., Washington, D.C. 20460.

CALIFORNIA TO PROPOSE REGULATIONS FOR SLUDGE APPLICATION, DISPOSAL ON LAND

Regulations governing the handling, disposal and application to land of sewage solids have been developed in draft form by California Department of Health's Vector and Waste Management Section. Regulations are now being circulated among interested agencies, prior to formal proposal for public hearings.

As prepared in draft, the proposed regulations set general requirements governing sludge management regardless of the type of disposal or use of sewage solids intended or practiced. Additional requirements are then imposed based on broad sludge use modes: disposal on land not used to grow grass or other plants; application of sludge on land encumbered in perpetuity to support only nonedible vegetation; application of sludge to land which supports or could support edible vegetation; and sale or donation of sludge for potential use in home gardens.

Draft regulations also classify sludge as Grade 1, 2 or 3, depending upon the concentration of cadmium and polychlorinated biphenyls and the ratio of cadmium to zinc concentration. Grade 1 sludge would have less than 25 milligrams cadmium per kilogram sludge dry weight; less than 10 mg PCB per kg sludge; and a cadmium concentration lower than 1.5% the zinc concentration. Grade 2 sludge would be the same as Grade 1, except that cadmium concentration would be between 25 and 100 mg per kg sludge. Grade 3 sludge would have cadmium and PCB concentrations as in Grade 2, but with any ratio of cadmium to zinc concentration.

Application to Non-Agricultural Lands

General requirements are largely devoted to public health-related concerns associated with sludge management at the wastewater treatment plant and disposal site, as well as procedural matters such as inspections and reporting requirements. Wastewater treatment authorities would be required to submit quarterly analyses of the constituent elements of sludges destined for land disposal at other than rigorously controlled Class I disposal sites, and annual reports on all land applications.

For disposal on land not used to grow plants, the draft regulations distinguish between landfill disposal and disposal on land dedicated in perpetuity for sludge disposal. Sludge bound for landfill must be stabilized or lime-treated and covered by a six-inch layer of soil each day. Disposal to dedicated land is permitted only as approved in writing by the health department.

Requirements for sludge disposal on land encumbered to support only nonedible vegetation distinguish between land with and without public access within one year after application. Even where there is no public access, cadmium-bearing sludge may not be added to soil which contains more than 8 mg cadmium per kg soil as an average in the top six inches of soil or to soil which has received 18 lbs. of cadmium per acre from previous applications of sludge or agricultural chemicals. Where there is public access, sludge must also have undergone composting, long-term storage or equivalent treatment to destroy disease-causing organisms.

Application to Land Used to Grow Food

Sludge utilized on agricultural lands which support or could support edible vegetation must be applied at a rate which would add less than 0.3 lbs. cadmium per acre per year. Cadmium-bearing sludge may not be added to soil which contains more than 2 mg cadmium per kg soil as an average in the top six inches of soil or to soil which has received 5 lbs. of cadmium per acre from previous applications. Sludge must conform to Grade 1 or 2 and must be stabilized.

Sludge applied to land to be used as pasture land for slaughter animals, or to land which will be used within three months after application to grow fodder for slaughter or dairy animals, or to land which will be used within one year as pasture land for dairy animals, must undergo composting or equivalent treatment. Sludge must be washed from vegetation.

All sludge applied to land used to grow crops for human consumption must undergo composting or equivalent treatment, and no contact between sludge and edible parts of the plants is permitted. Detailed analyses of both soil and crops must be conducted. Sludge to be sold for home gardening use must be dry and stabilized and have undergone composting or equivalent treatment. Any such sludge must conform to Grade 1 and carry a label prescribed by the state.

CONSULTANTS SELECTED FOR SAN FRANCISCO BAY REGION WASTEWATER SOLIDS STUDY

Consultant contracts totaling more than \$640,000 were given final approval by the East Bay Municipal Utility District (EBMUD) last month for services relating to the joint San Francisco Bay Region Wastewater Solids Study for which EBMUD serves as lead agency (SLUDGE, July 1976, p. 30). Engineering services will be performed by CH₂M Hill under a \$350,000 contract; environmental impact report services by Environmental Impact Planning Corp. under a \$240,000 contract; and marketing services by Gruen Gruen & Associates for about \$60,000. All three consultants have San Francisco offices.

In addition to EBMUD, study participants include the city and county of San Francisco, the city of San Jose, and Central Contra Costa Sanitary District, with support from regional and state agencies and U.S. Environmental Protection Agency. EPA is funding 75% of the \$1.8-million cost, with the state and localities sharing the balance. Goal of the study is development of a regional policy and plan for long-term municipal wastewater solids management needs in the nine-county Bay Area, with staged facilities plans for the four major wastewater treatment agencies as necessary to implement the regional program.

Approximately 12,000 wet tons of raw wastewater sludge or 450 dry tons are presently produced each day in the study area. Treated sludge for disposal amounts to about 2,000 wet tons or 280 dry tons per day. Raw wastewater sludge loadings are expected to increase to 20,000 wet tons per day in 1985, and to 25,000 wet tons per day in 2000, due to increased population and industrial activity. As a result of secondary and advanced wastewater treatment, the quantity of treated sludge for disposal is expected to increase two to fivefold in the near future.

Phase I of the study, development of a work plan and initiation of long-lead pilot programs, was completed last fall. Phase II, which continues through December 1977, involves development of a regional wastewater solids management policy and regional plan, which must be approved by participating agencies before Phase III can begin. That phase, to be completed by April 1978, involves development of detailed, staged facilities plans for the four major treatment agencies. Phase IV, ending December 1978, covers preparation and processing of project and environmental impact reports.

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USG STUDY SEES GOOD POTENTIAL FOR COMPOST USE IN WASHINGTON METROPOLITAN AREA

Potential markets exist for virtually all of the sewage sludge-derived compost that could be produced in the Washington, D.C. metropolitan area, but a lot of work remains before that potential could be realized, according to Urban Services Group, Inc. In a study prepared for the Metropolitan Washington Council of Governments, USG said these potential markets could be secured if well-conceived, thorough active approaches to them are taken.

Presenting the results of the study of the Third National Conference on Sludge Management, Disposal and Utilization in Miami, Fla., last month, USG's Clark W. Hand said a "rough and likely conservative estimate" of the maximum compost production potential in the Washington Standard Metropolitan Statistical Area (SMSA) is 1,700 tons per day. The study results show that from 900 to 15,500 tons per day might be consumed if use is kept within a radius of about 25 miles from the city, or from 5,600 to 160,900 tons per day if use is extended to within 100 miles.

"This is not to say that the markets are waiting," Hand warned. "The experience to date, while substantial, is not at the stage where users would be willing to accept and use the material without further considerations of acceptable product specifications, use or purchase agreements, delivery considerations, application rates and actual applications."

Hand further warned that results of the study do not "deliver" the markets to local jurisdictions and agencies which may seriously consider program implementation. It does, however, provide a good indication of the expected level of compost use for all investigated markets; indication of marketing constraints, other than price, which could preclude reaching maximum use; and approaches and tools that could be used in program design and implementation to successfully secure different market segments.

BAKER, RADIAN TO DEVELOP GUIDELINES FOR FGD SLUDGE HANDLING, DISPOSAL

Michael Baker, Jr., Inc., Beaver, Pa., and Radian Corp., Austin, Tex., have been retained by Electric Power Research Institute, Inc., Palo Alto, Calif., to develop guidelines for proper handling and disposal of flue gas desulfurization sludge. Stated objective of the study team is to "develop guidelines that will be a useful summary tool for the entire utility industry, and in so doing, to shift the whole emphasis in the handling, transport, processing, treatment and disposal of FGD residues from the theoretical, experimental plane to the practical, implementation level."

In proposing this study, Baker noted that regulatory agencies have emphasized the commercially available FGD sludge fixation method, employing chemical additives, as the only acceptable disposal method. "Considering the projected costs of this method, we think it is prudent to examine all of the available information to insure that the results achieved justify this financial commitment to sludge fixation. We think it is prudent also to determine if alternative disposal systems exist which are environmentally acceptable but less costly," Baker said.

Over the year-long study period, the study group will collect and review data from various sources knowledgeable about FGD systems and their byproducts. Alternative fixation processes will be evaluated to determine the effect of variables such as sludge characteristics, temperature, moisture, stabilizer composition, and curing periods; and the chemical/physical characteristics of FGD sludges, fixed and unfixed, will be compared with similar engineering, industrial and geological materials. Alternative disposal methods, such as mine filling and blending of FGD sludge with ash, strip mine spoil, and mineral tailings, will also be studied.

From this information, the study group will develop a range of costs for a hypothetical 500 MW plant burning typical eastern and western coals. Final report will assess capital, operating and maintenance costs, expressing overall costs in units of dollars per ton of waste produced, dollars per ton of coal burned, and mills per kW of energy produced.

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BUMINES PROCESS CONVERTS MINE WASTE SLUDGE TO SOLID FILL MATERIAL

Studies by U.S. Bureau of Mines show that waste sludge from mining operations can be converted into solid material through application of direct current. Tests of "electrokinetic densification" at lead, zinc and silver mines in Idaho show the process quickly and economically dewatered and consolidated waste slime into solid material used as backfill in mined out spaces. Laboratory tests showed similar results using sludge from Appalachian coal mining operations.

In the Idaho tests, the technique was applied by conducting 100 to 400 volts of direct current through the slimes using common materials like wire fencing and metal pipe as electrodes. The current caused suspended particles to move toward one electrode, and clarified water to move toward the other. BuMines called the technique "highly promising wherever there is a need both to dispose of slimy mineral wastes and to backfill underground mine workings with solid material for extra support."

In one test, a "stope" or underground mine chamber was backfilled with 150 cubic yards of sandy, slime-bearing slurry. Then electrokinetic densification was used to dewater the mass for several hours until it was solid enough to walk on. In a second step, electrokinetic treatment for 25 hours compacted the residue until it became hard enough for mining operations to resume.

Initially, power required for dewatering the entire volume of slurry totaled 37 kilowatt hours. Further consolidation and hardening required 20 kWh per cubic yard of densified fill. Labor and equipment costs were not gathered, but BuMines said savings could be achieved in commercial use by using cheaper electrodes and fill methods that take advantage of natural drainage and natural settling of coarse solids.

In laboratory tests, BuMines used direct current to dewater and densify fine-grained coal sludge in order to alleviate disposal problems and recover the high energy value present in the waste. Tests were performed on thickened underflow (no flocculant added) from a northern Appalachian coal preparation plant, with 65% of the particles less than 0.1 mm in diameter.

(Continued on following page)

BUMINES PROCESS CONVERTS MINE WASTE SLUDGE TO SOLID FILL MATERIAL (CONT.)

In one test, a slurry of 55% dry-weight moisture content was converted into a firm dense material with a 20% dry-weight moisture content. These results were achieved in three hours with current density of 3.7 amp per square foot and a power expenditure of 35 kWhr per cubic yard. The treated material has an average heating value of 10,400 Btu per pound. Two other types of sludge were also tested; thickener underflow from a southern Appalachian coal preparation plant with flocculant added responded well to the treatment, but response was poor with sludge from an acid mine drainage treatment plant.

Following reports are available free from Publications Distribution Branch, BuMines, 4800 Forbes Ave., Pittsburgh, Pa. 15213: "Electrokinetic Densification of Hydraulic Backfill -- A Field Test," RI 8075; "Electrokinetic Consolidation of Slimes in an Underground Mine," RI 8190; and "Dewatering and Densification of Coal Waste by Direct Current -- Laboratory Tests," RI 8197.

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MSU PROFESSOR TO DEMONSTRATE ALUMINUM RECOVERY FROM ALUM SLUDGE FOR AWWA

American Water Works Association Research Foundation has awarded Michigan State University Prof. David A. Cornwell \$25,000 to demonstrate a process for recovery of aluminum from alum sludge generated by municipal water treatment plants. About one million tons of alum sludge is produced annually in the U.S. as a byproduct of drinking water purification; it is usually dewatered and landfilled, but Cornwell says millions of dollars can be saved by recovering and recycling the aluminum.

First step in the process, which has already been demonstrated in a process Cornwell helped develop to recover aluminum after it has been used to coagulate and recover phosphorus from sewage sludge, involves acidifying the sludge to free aluminum ions. Then a solution of kerosene and alkyl phosphate is added and the mixture is churned, putting the aluminum ions in contact with the kerosene solution so they latch on to the alkyl phosphate ions.

When the mixture is allowed to settle, the kerosene solution, containing the aluminum ions bound to the alkyl phosphate ions, floats to the top and can be withdrawn. When this solution is treated with sulfuric acid, alum is formed which can then be separated from the kerosene and both can be reused. After the alum has been removed, the remaining solids settle out readily leaving a residue that can be burned or landfilled. Cornwell says essentially all of the aluminum can be recovered, but it might not be economical to do so in cities which use only a small amount of alum for coagulation.

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OTHER BUSINESS & TECHNOLOGY NEWS

Zimpro, Inc., Rothschild, Wis., has received an \$11.5-million contract to provide a system for thermal treatment of sewage sludge at the new 42-MGD Cedar Rapids, Iowa, wastewater treatment plant. Zimpro will furnish three 200-gallon-per-minute thermal sludge conditioning units which will sterilize sewage solids and convert them to a dewaterable material, which will then be dewatered on vacuum filters and burned auto-thermally in a seven-hearth Zimpro multiple hearth furnace. Equipment is scheduled for completion in 1979; consultant on the project is Howard R. Green Co., Cedar Rapids.

Manchak Colorado, Inc., Santa Barbara, Calif., is making available mechanical-chemical-thermal processing pilot plants for test demonstrations at plants, landfills and other facilities generating municipal, industrial and agricultural sludge. A trailer-mounted simulation of a full-scale plant, the pilot has a wastewater capacity of 1,000 gallons, with the reactor processing one cubic foot of sludge per minute of amended sludge from the wastewater or direct intake of semi-solid sludge. Six different wastewater sludges can be tested simultaneously, Manchak says, and the proceeded effluent and sludges are odor- and pathogen-free and metals are bound. Contact: MCI, P.O. Box 30737, Santa Barbara, Calif. 93105.

(Continued on following page)

OTHER BUSINESS & TECHNOLOGY NEWS (CONT.)

Envirex, Inc., Waukesha, Wis., has published a new brochure describing its Rex non-metallic chain for rectangular sludge collectors. Copies of Brochure No. 315-65 are available from Envirex, Water Quality Control Division, 1901 South Prairie Ave., Waukesha, Wis. 53186.

Resources Conservation Co., Renton, Wash., has named David Hervey manager of business development. Hervey is formerly with RCC's parent, The Boeing Co.

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NEW SLUDGE PUBLICATIONS AVAILABLE

Land Application of Waste Materials includes 22 papers presented at a national symposium in March 1976 covering research on consideration of soils for accepting wastes; disposal of agricultural, silvicultural, municipal and industrial wastes; sediment as a waste product; economics of land disposal; and a review of unresolved problems. Copies of the 320-page, softbound proceedings are available @\$10 from Soil Conservation Society of America, 7515 N.E. Ankeny Road, Ankeny, Iowa 50021.

Anaerobic Digestion of Lime Sewage Sludge, Research Report No. 50, favorably assesses the ability of the anaerobic digestion process to accept the sludge produced by the addition of hydrated lime to the raw sewage of a conventional activated sludge plant. Copies of the 17-page research report are available free from Training and Technology Transfer Division (Water), Environmental Protection Service, Environment Canada, Ottawa, Ontario K1A 0H3, Canada.

Analytical Methods for Sewage Sludge Analysis, Vol. IV of a larger study on "Heavy Metals in Agricultural Lands Receiving Chemical Sewage Sludges," reviews both existing and newly developed analytical methods. Copies of Research Report No. 51, 33 pages, are available free from Training and Technology Transfer Division (Water) Environmental Protection Service, Environment Canada, Ottawa, Ontario K1A 0H3, Canada.

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UPCOMING SLUDGE MANAGEMENT MEETINGS

Jan. 26-27: Municipal Waste Treatment, Evaluation of Current Developments, Baltimore, Md. Contact: James D. Lyman, Office of Public Affairs, U.S. Energy Research and Development Administration, Washington, D.C. 20545, (301) 353-5560.

Jan. 31-Feb. 2: First International Cadmium Conference, San Francisco, Calif. Contact: Cadmium Council, 292 Madison Ave., New York, N.Y. 10017, or Cadmium Association, 34 Berkeley Square, London W1X 6AJ, England.

Feb. 1-4: National Conference on Hazardous Waste Management, San Francisco, Calif. Contact: Conference Committee, Crocker National Bank, Sacramento Main Office, P.O. Box 1678, Sacramento, Calif. 95808.

Feb. 16-18: Sludge Handling and Disposal Seminar, Calgary, Alberta, Canada. Contact: Gary Webster, Water Pollution Control Section, Northwest Region, Environmental Protection Service, Environment Canada, Imperial Oil Bldg., Edmonton, Alta. T5J 2X9, Canada; (403) 425-4569.

March 21-23: Municipal Wastewater and Sludge Recycling on Forest Land and Disturbed Land, Philadelphia, Pa. Contact: Dr. William E. Sopper, Institute for Research on Land and Water Resources, Pennsylvania State University, University Park, Pa. 16802; (814) 863-0291.

April 27-29: Food, Fertilizer and Agricultural Residues, Syracuse, N.Y. Contact: Waste Management Conference, Cornell University, 207 Riley-Robb Hall, Ithaca, N.Y. 14853.

Aug. 8-9: Ninth Mid-Atlantic Industrial Waste Conference, Lewisburg, Pa. Contact: Michael LaGrega, Civil Engineering Dept., Bucknell University, Lewisburg, Pa. 17837.

Aug. 15-19: Water and Wastewater Control in the Paper Industry (short course), Appleton Wis. Contact: J. John Keggi, Director of Continuing Education, Institute of Paper Chemistry, P.O. Box 1039, Appleton, Wis. 54911; (414) 734-9251.

END

ENVIRONMENTAL INFORMATION
RESOURCES FOR
STATE AND LOCAL ELECTED OFFICIALS

solid waste

MATERIALS PACKET
(INCLUDING PRIMARY LITERATURE)

Materials packets are available for
review in the

EPA Headquarters Library
Room 2404, Waterside Mall
401 M Street SW
Washington, D.C.

The Materials Packet
(Including Primary Literature)

Wherever possible in this guide to information on solid waste, copies or examples of the materials discussed have been included within the text. However, some of the secondary literature sources discussed did not lend themselves to inclusion within the present format. In those instances, whenever those secondary materials were readily available, they were included in the materials packet designed to accompany this guide.

In addition, throughout this guide references have been made to a variety of literature and information sources which are classified as "primary literature" in the General Reference Guide. Non-documentary sources and much of the secondary literature lead the information-seeker to handbooks, reports, journal articles, legislation, hearing transcripts, and many other forms of information considered to be primary literature. Where primary literature was considered to be of particular interest, it too was included in the materials packet.

Materials in the packet are organized into two volumes. Volume I contains general solid waste management information, including reports dealing with both resource recovery and hazardous waste. Volume II contains information pertaining specifically either to resource recovery (particularly for energy) or to hazardous waste management and disposal. Materials in both packets are intended to be representative only and by no means include all the information sources considered to be valuable.

A listing of materials included in the two volumes of the materials packet is included on the following pages.